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Poverty Alleviation in Mountain Areas of China

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Narpat S. Jodha, Binayak Bhadra, Narendra R. Khanal, and
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Poverty Alleviation in Mountain Areas of China

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Foreword

Today the Chinese economy is perceived as one of the economies of the future. China has much to be proud of, and its people have worked hard to build prosperity and a bright future for coming generations. In terms of economic development, China's progress is well charted, and yet its government still has a deep concern about the many who remain poor, an overwhelming number of whom live in mountainous areas and who are often left on the fringes of the mainstream economy. How to bring these people into the mainstream of development is an overriding concern of China's development professionals and was the main focus of this conference on 'Poverty Alleviation in Mountain Areas of China' held in 2002 from November 11th to the 15th in Chengdu.

Poverty in mountain areas is not a new concern for China. In the winter of 2000 (January 31st-February 4th), a conference was held on 'The Anti-Poverty Experience in China's Himalayan Region.' From the proceedings of that conference and the contributions to this one, it can be seen that Chinese development professionals are investing a great deal of effort into the eradication of absolute poverty from Chinese mountain areas.

The organisers of this conference include the Institute of Mountain Hazards and Environment (IMHE), Chengdu, China; InWEnt Capacity Building International, Germany (formerly DSE); The International Fund for Agricultural Development (IFAD) and The International Centre for Integrated Mountain Development (ICIMOD), each of which has a long-term mission to work towards the alleviation of poverty. The various approaches of these organisations, the knowledge their professionals brought to the conference on development in mountain areas, the issues raised, and strategies for not only the survival of but also the prosperity of the mountain poor made the conference a rich experience.

In this current collection, the organisers have drawn on the experiences of Chinese researchers who have examined the root causes and incidences of mountain poverty, as well as professionals pursuing strategies for its alleviation. The environment as well as the management of natural resources, including human resources, are identified as critical areas and examples have been drawn from other countries in the Hindu Kush-Himalayan region. From agriculture, off-farm income generation and enterprises to huge infrastructural investments that involve the internal relocation of huge populations, the conference participants discussed and examined a wide range of options for and experiences in poverty alleviation in mountain areas, particularly in China.

Many individuals helped to organise the conference and to prepare this document. On behalf of the principal organisers we would like to acknowledge the work of Jürgen Richter, Narpat S. Jodha, Narendra R. Khanal, and Binayak Bhadra in bringing these papers together and contributing to the technical editing. The work of Li Tianchi and Qiao Jianping for the Chinese paper contributions was valuable. The staff who looked after the facilitation of the conference were Maria Gerster-Bentaya, Annegret Schmidjell and Niko Von der Luehe from Germany and Frank Jie Ding from China. Other staff involved from outside China were Petra Kade from Germany and Angeli Shrestha from Nepal. The conference would not have been possible at all without the enthusiastic support of the staff of IMHE and, in particular, Gao Meirong who is working on the Chinese edition of these proceedings. Other staff from IMHE were Zhang Dan, Chen Ningshen, Chen Xuehua, and Zhou Daqiong. On behalf of all the organisers, we would like to acknowledge their invaluable input and thank them for it.

In keeping with the best traditions of our institutions, we are pleased to present this current document so that the proceedings of the conference can be of wider use to those whose concern and commitment are to the alleviation of poverty in mountain areas, in general, and in China in particular. For this reason the proceedings will be published in Chinese also.

Hans Pfeifer	Ganesh Thapa	Qiao Jianping	J. Gabriel Campbell
Director of	Reg. Economist	Director of	Director General
Department	Asia & the Pacific	Institute	ICIMOD
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Preface

The conference on 'Poverty Alleviation in Mountain Areas of China' organised by the Institute of Mountain Hazards and Environment (IMHE), Chengdu, China; InWEnt Capacity Building International, Germany (formerly DSE), The International Fund for Agricultural Development (IFAD) and The International Centre for Integrated Mountain Development (ICIMOD) took place from November 11th-15th, 2002, in Chengdu, China.

This conference came ten years after the conference on 'The Anti-Poverty Experience in China's Himalayan Region' in 1992 and draws on the progress made since that time and the debate on this important issue that received dynamic impetus from the conference held on 'Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia' (January 31st- February 4th 2000).

Whereas the principal focus of all three conferences is poverty in mountain areas, this current document examines the problems in Chinese mountain areas in particular. It looks at the causes and incidences of poverty and strategies for alleviation in general in the first six of its twenty chapters. These set the scene, Chapter 1 looks at the conference and the paper topics as a whole, and a regional perspective is brought to bear by placing China in the context of first the Asia Pacific Region (Chapter 2) and the Hindu Kush-Himalayan Region (Chapter 3), before looking at mountain areas of China, nature and causes of poverty and the importance of development indicators in the context of mountain development. The latter discussion is useful, since it has often been argued that the usual development indicators are not of much value in terms of mountain areas.

Within twenty discrete chapters, there is a broad, rich range of topics drawing on experiences from the Indian Himalayas and the mountains of Bhutan to illustrate methods of poverty alleviation that might be of relevance to mountain areas placed thousands of miles apart. There is an interesting mix of ideas woven together in terms of income-generating strategies that range from agricultural transformation into off-season crops and non-timber forest products and livestock husbandry to a strategy for mountain tourism that is geared to community development. Infrastructure is dealt with in both the micro-and macro sense. In view of the human resource aspect an attempt has been made to examine the need for education of mountain people per se, and the difficulty of providing schools for children against the competing demands to help families make ends meet, the value of children's labour, and the inability of families to afford proper schooling. The final chapter deals with IFAD's approach to alleviation of

poverty in the mountain areas of China and, in this respect, gives the donor's view and experience of working in such a vast region.

No collection on mountain poverty would be complete if one or other author had not discussed the issue of adequate compensation by mainstream economies for the use of mountain resources. This is a debate that is bound to arise time and again as we look at means to solve the seemingly insurmountable problems of alleviating the poverty of mountain areas.

This volume gives one a striking impression of the tremendous scale of the problem, the vastness of Chinese mountain areas, and the density of its heterogeneous and culturally diverse populations that bring home to the reader the expanse of these mountain worlds within a vast country. The commitment of the government and peoples of China and their painstaking efforts to erase the lines that divide the haves from the have nots are represented in these pages. There is much to learn from this collection, and many ideas that can be further developed not only by development professionals but by policy-makers and planners dealing with similar issues to those faced by their counterparts in China.

Perhaps no collection of papers, no matter how varied or broad in scale, can do justice to the problems of the poor of mountain areas in China, nor the immense efforts made by its committed development professionals to overcome them. It is, however, an offering in the right direction and, as such, is a tribute to the organisers, the participants, and their constituents: the very poorest of the poor.

Narpat S. Jodha
Binayak Bhadra
Narendra R. Khanal
Jürgen Richter

Acronyms and Abbreviations

ACAP	=	Annapurna Conservation Area Project
ADB	=	Asian Development Bank
AKRSP	=	Aga Khan Rural Support Programme/Pakistan
APPA	=	Appreciative Participatory Planning
CAS	=	Chinese Academy of Sciences
CBE/s	=	Commune and Bridge Enterprise/s
CBO	=	Community Based Organisation
CBS	=	Central Bureau of Statistics
CCTV	=	China Central Television
CIFOR	=	Center for International Forestry Research
CNY	=	Chinese yuan
CPR	=	common property resource
CSO	=	Central Statistical Organisation
DFID	=	Department for International Development
DPCSD	=	Department for Policy Coordination and Sustainable Development
DPP	=	District Partners Programme
DSE	=	Deutsche Stiftung für internationale Entwicklung (The German Foundation for International Development), now InWEnt
EPW	=	Economic and Political Weekly
ESF	=	Environmental Services Facility
FDI	=	foreign direct investment
FG	=	food grain
FG	=	functional groups
FITs	=	free independent trekkers
FYP	=	Five Year Plan
GDI	=	Gender-related Development Index
GDI	=	Gender Development Index
GDP	=	Gross Domestic Product
GEM	=	Gender Empowerment Index
GIS	=	Geographical Information Systems
GNI	=	Gross National Income
GNP	=	Gross National Product
GR	=	growth rate

HDI = Human Development Index
HIV/AIDS = human immuno-deficiency virus/acquired immuno-deficiency syndrome
HKH = Hindu Kush-Himalayas
hm = hectare metre
HM = His Majesty
HP = Himachal Pradesh
HPMC = Himachal Pradesh Horticultural Products Marketing and Processing Corporation Ltd.
HRD = human resource development

IARI = Indian Agricultural Research Institute
IBP = Intensive Banking Programme
ICARDA = International Centre for Agricultural Research in Dry Areas
ICIMOD = International Centre for Integrated Mountain Development
IDS = Integrated Development Systems/Nepal
IFAD = International Fund for Agricultural Development
IFPRI = International Food Policy Research Institute
IGU = International Geographical Union
IIPS = International Institute for Population Sciences
IMHE = Institute of Mountain Hazards and Environment
InWEnt = Internationale Weiterbildung und Entwicklung gGmbH (Capacity Building International, Germany)
ISRIC = International Soil and Reference Information Centre
IT = information technology
IUCN = World Conservation Union
IYM = International Year of Mountains

LRT = light rapid transit
LUCC = land use and land cover change

M&E = monitoring and evaluation
MCPW = Micro-credit Project for Women
MDG = Millennium Development Goals
MNC = multinational corporation
MOA = Ministry of Agriculture
MW = mega watt

NF = non-farm
NGO = non-government organisation
NPC = National Planning Commission/Nepal
NR = Nepalese rupee
NRB = Nepal Rastra Bank/Nepal
NREP = National Rural Employment Programme
NRM = natural resource management
NSDP = net state domestic product

NSS = national sample survey
NTFP = non-timber forest product

OGL = Open General License
ORS = oral rehydration solution

PCI = per capita income
PCRW = Production Credit for Rural Women
PLG = Project Leading Groups
PMO = project management office
PPP = purchasing power parity
PRA = participatory rural appraisal

R & D = research and development
RCC = rural credit cooperatives
RCCU = rural credit cooperative unions
RLGP = Rural Landless Employment Guarantee Programme
RMB = Renminbi (another term for the yuan)
RSRF = Rural Self-reliance Fund

SALT = Sloping Agricultural Land Technology
SAPAP = South Asian Poverty Alleviation Programme
SAPPROS = Support Activities for Poor Producers/Nepal
SEPA = State Environmental Protection Administration
SEWA = Self-employed Women's Association
SFDP = Small Farmer's Development Programme
SNV = Netherlands Development Organisation
STD = sustainable tourism development
STDC = Sustainable Tourism Development Committee

TRPAP = Tourism for Rural Poverty Alleviation Project
TVE = township and village enterprise

UN = United Nations
UNCED = United Nations Convention (Conference) on Environment and Development
UNCSD = United Nations Commission on Sustainable Development
UNDP = United Nations Development Programme
UNEP = United Nations Environment Programme
UNESCO = United Nations Educational, Scientific and Cultural Organisation
UNFPA = United Nations Fund for Population Activities
USD = United States dollar

VAM = Vulnerability Analysis and Mapping
VDC = Village Development Committee
VDP = village development plans
VIG = village implementation groups

WCB = Water Conservancy Bureau
WCED = World Commission on Environment and Development
WF = Women's Federation
WFP = World Food Programme
WTO = World Trade Organisation
WTTC = World Travel and Tourism Council
WWF = World Wildlife Federation

ZEL = former Centre for Food, Rural Development and the Environment, DSE, now InWent, Div. for Rural Development, Food and Consumer Protection

Glossary

mu	one fifteenth of a hectare
RMB yuan	Reminibi, the word for Chinese currency. The largest units is the yuan. In 2002, 1 USD = 8.27 yuan

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Chapter 1

Poverty: Issues and Options in Mountain Areas, with Specific Focus on China

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Introduction

This chapter reports the findings of a five-day 'International Conference on Poverty Alleviation in Mountain Areas with Special Focus on China'. China's rising concern regarding poverty in its mountain areas and policy–programme interventions to address them led to this workshop, the conclusions of which were quickly synthesised for presentation to relevant policy groups in the country. Following an executive summary, the second section of this chapter covers the background, objectives, and organisational structure of the conference. This section is divided into two parts: the first comments on the emerging issues and concerns relating to poverty, which was the focus of most of the papers and group discussions during the conference. The second part sums up the past discourse and debate on the subject to facilitate policy and action on poverty in China. Section 3 summarises the main issues, challenges, and opportunities highlighted in the papers presented at the conference. Section 4 highlights the issues raised and options and recommendations made in working-group discussions on poverty alleviation, and the final section presents the main inferences and recommendations made by the conference.

Executive Summary: A Post-conference Brief for Policy Makers[1]

Introduction

The conference was jointly organised by Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, INWENT (DSE-ZEL, Germany), IFAD (Rome), and ICIMOD (Kathmandu) in Chengdu. Nearly 80 participants from China and other countries attended, including representatives of donor agencies. Participants included researchers, policy/programme-makers, NGOs, and field workers.

In addition to being one of the activities planned during the International Year of Mountains (2002), the conference was very timely in China where, despite remarkable economic achievements, the country is faced with new challenges of rising regional inequities, as the mountain areas lag far behind other regions of the country in economic development, the elimination of poverty, and the capacity to develop quickly in the future. Furthermore, China's 'opening to the world' is not confined to trade liberalisation alone, but includes increased interactions and exchanges with other countries in the field of development approaches and strategies, particularly in the context of mountain areas.

The conference was to facilitate and share the experiences of different mountain areas from the Hindu Kush-Himalayan region in terms of understanding poverty and ways to alleviate it. To accomplish this goal, experts were asked to focus on relevant issues, policies, strategies, and experiences directed to mountain development and poverty alleviation.

This summary of conference discussions (during the plenary as well as group sessions) is not designed to be a routine report of the proceedings of each session and each issue debated. Instead, we summarise the substantive issues and their implications that have direct and immediate policy relevance.

Highlights

The conference was designed to facilitate exchange of development/poverty reduction experiences in different mountain regions. The accounts of successes and gaps in poverty alleviation efforts from mountain areas of India, Nepal, Pakistan, Bhutan, and several mountain counties of China (particularly from Western China) richly contributed towards attaining this goal.

[1] Entitled, 'Executive Summary of the Conference Deliberations', prepared by N.S. Jodha for submission to a meeting of policy-makers in Beijing in December 2002.

Chinese organisers of the conference initially thought primarily of learning from other mountain areas, and they did. But an equally important outcome was that experts and policy-makers from other mountain regions learned from the Chinese experience as well.

A major difference between the presentations and elaboration of issues made by the two groups was that Chinese experts put up simple but pragmatic observations and arguments, while outsiders did the same with more conceptual, theoretical backgrounds to their observations.

Incidentally, if one compares the present conference with the international conference on 'Anti-Poverty Experiences in China's Himalayan Region' in May 1992, held in Beijing (organised by ICIMOD in collaboration with the Chinese Academy of Sciences[CAS] with which one of the present authors was closely associated), the progress in terms of conceptualisation and articulation/presentation (in English) on the part of Chinese experts was remarkable.

Focus on mountain poverty

The need for an increased and changed focus on poverty alleviation in mountain areas was strongly demonstrated by the following reasoning presented at the conference.

China has a well-recognised record of achieving both growth and equity. It has no visible poverty in terms of hunger, landlessness, or gaps in various social sector indicators (such as education, health, and required social services). However, the pace and patterns of present gains (or poverty alleviation) now indicate significant differences emerging between mountain areas and the rest of the country. This is a growing concern of the government. The implied regional inequalities may become further accentuated in the era of economic globalisation. Several examples from other countries were presented in this context.

Despite increased concerns and efforts, mountain area development poses a significant set of challenges for planners. First, the relatively easy development approaches that led to equity promotion and poverty alleviation in other areas (plains) may not readily work in mountain areas, due to the latter's specific features like poor accessibility, resource diversity, fragility and marginality of land, and population (i.e., minority nationalities). Thus, past strategies cannot be readily replicated in poor mountain areas, as the former lack a mountain perspective.

Second, the government's conventional approach to mountain areas of helping through subsidy, charity, or outright social transfers cannot be sustained for long in the era of economic globalisation and associated structural/economic reforms, which do not permit subsidies. Hence, there is no escape from designing and implementing development/poverty alleviation strategies that suit the situation of mountain areas and make mountain areas productive and competitive.

In contrast to the above challenges, there are several development opportunities in mountain areas which could be profitably exploited and the need for charity eliminated. As Chinese experts from different areas indicated, there are several niche resources such as minerals, hydropower, non-timber forest products (NTFPs–herbs, flowers, etc.), and other opportunities linked to tourism, rich biodiversity, and indigenous products. These could be harnessed with profit. Many examples of harnessing such niche opportunities were presented from Nepal, India, Pakistan, and Bhutan, as well as from some mountain counties in Hunnan, West Sichuan, and Tibet. To build upon these successful experiences, increased exchange of experiences between mountain regions and countries through focused networking arrangements was advocated.

One of the less emphasised potential income sources for mountain areas is adequate compensation for the use of mountain resources (e.g., timber, minerals, water for hydropower and irrigation, and so on) used by mainstream economies. This issue was repeatedly emphasised during discussions on the highland–lowland economic links which are currently unfavourable to mountain areas. Governments should act on this issue by pricing mountain resources fairly and compensating adequately for their use.

Why mountain communities are poor

While discussing the issues of why mountain communities are poor and how they can be helped to get rid of poverty, several concrete suggestions emerged; and these may constitute the most constructive and usable outcome of the conference. The important ones are listed below.

- Integration of the mountain economy with the mainstream economy
  This suggestion was put forward repeatedly by many experts. This would not only promote investment and local-resource-centred development but would help to reorient local communities towards economic enterprises and incentives. This will require increased investment, as most mountain areas suffer from chronic under-investment. The Chinese government's recent policies on 'go west', and on encouraging rich provinces and counties to help poor provinces and counties, are two

useful initiatives in this direction. However, the experts suggested more liberal fiscal facilities for mountain areas.

- **Enhanced accessibility**
  Improved physical and market linkages and access to mountain areas are key requirements for economic transformation of these areas. With improved access, the introduction of new technologies and management/marketing systems, and the general inflow of information and skills, will become easier and usable. It will help in local human resource development also.
- **Demarginalisation of marginal populations**
  Most mountain areas in China are inhabited by minority nationalities. They are not only poor but are also largely governed by their traditional cultural systems and norms. The latter in turn do not encourage economic thinking and action needed for modern development. In this context need for HRD (human resource development) and community participation was emphasised. Reduced controls and increased autonomy for mountain areas and communities were also advocated.
- **Fragility and environmental concerns**
  The fragility of sloping landscapes makes intensive resource use difficult and costly in mountain areas. Hence, mountain areas need cautious and non-extractive resource usage systems. Combining production and protection needs was emphasised. In this context, identification of non-extractive farming systems, appropriate resource upgrading technologies, and promotion of off-farm employment opportunities were emphasised and illustrated by experiences from different areas.
- **Diversities to be recognised**
  Mountains are well known for their biophysical and socioeconomic diversities. Hence, development strategies have to be area specific. To facilitate this, the development experience of different mountain areas in China and outside should be shared on a regular basis. Developing some networking arrangements on an institutional basis needs strong consideration and support.

Summary

The issues identified and discussed made the conference a successful, educative, and productive exercise. It identified several issues for consideration by policy-makers and planners. As a side benefit, it generated the idea of building a community of mountain development experts who informally agreed to continue exchanging ideas and experiences in the future. Given interest and support from the mountain countries and the donors, this initiative can be institutionalised. Most participants were happy to be involved in the focused discourse on poverty alleviation issues in

mountain areas of China and hoped that the experiences of successful programmes would be repeated in different mountain regions.

Background and objectives

The preceding section summarised the highlights of the conference. The processes leading to them are elaborated upon in the following discussion.

Poverty is a pervasive feature of the Hindu Kush-Himalayan (HKH) mountains, including mountain regions of China, and the economic and environmental dimensions of mountain development are inextricably linked with poverty alleviation in these areas. In the face of relatively steady population growth and the rapid change in external relationships, traditional survival strategies are fast losing their efficacy in the mountains.

Furthermore, though mountain areas and communities share the broad causes and consequences of poverty that prevail elsewhere in the developing world, their problem is unique in terms of poverty-promoting processes. The latter are rooted in their biophysical conditions as well as in their environmental and socioeconomic imperatives, which (unless addressed appropriately) restrict income-enhancing options and their dependability. The conditions in mountain areas—inaccessibility and remoteness, the fragile and scale-sensitive nature of the resource base, underused niches for local production, and the marginal economic and political positions of mountain communities—add a critical dimension to the issues of poverty and sustainable development in these regions. Insufficient attention to these features has significantly reduced the effectiveness of past development interventions in mountain areas. As the forces of liberalisation and globalisation gather momentum, mountain areas and communities are further exposed to risks and uncertainties, with limited abilities to harness the new opportunities. To facilitate concerted action at the policy and programme levels, there is a need to take stock of the existing situation in mountain areas, and to distil lessons from past experiences in dealing with issues of economic and environmental development and alleviation of poverty.

Among the countries of the ICIMOD region (covering the contiguous mountainous area of Afghanistan, Pakistan, India, Nepal, Bhutan, China, Bangladesh, and Myanmar), China has been relatively successful in alleviating poverty in several of its mountain areas. Several well-targeted programmes have been in place for quite some time, and there is a lot to be learned from these experiences. However, despite these achievements, the levels of development and poverty reduction in mountain areas are far below the corresponding levels in other parts of China.

These gaps are significant because about one-third of China's population lives in mountain regions; 40% of the country's farmland and much of its forest and mineral resources are located in mountain areas. Furthermore, because of the specific conditions of mountain areas (fragility, marginality, and so on) the approaches and strategies that alleviate poverty in other parts of the country are not readily applicable to mountainous regions. The past charity-focused approach to helping these areas is less possible today due to global (market friendly) norms of resource allocation.

Guided by these concerns and the possibility of learning from the experiences of other countries within and outside the HKH, in November 2001 China requested DSE (the German Foundation for International Development) and ICIMOD to organise a regional workshop on 'Poverty in the Mountain Areas of China'. China's initiative to learn and share experiences on poverty reduction in mountain areas through international discourse builds upon similar efforts in the past. In 1993, a symposium entitled 'International Forum on Development of Poor Mountain Areas' was jointly sponsored by the Chinese Academy of Sciences, the State Council Leading Group for Economic Development of Poor Areas, the Ford Foundation, and ICIMOD. The meeting was attended by over 50 experts from China and other countries, including those of the ICIMOD region. The meeting facilitated the exchange of inter-country experiences and helped in synthesising key issues in the diagnosis of poverty problems. Several anti-poverty programmes and measures were assessed to help reorient development strategies that could simultaneously address poverty and environmental degradation. The proceedings of the symposium were subsequently published jointly by ICIMOD and the Chinese Academy of Sciences as '*Development of Poor Mountain Areas'* (Banskota and Sharma 1994).

The present regional workshop/conference sought to revisit many of the past issues in the contemporary global context, and to examine ongoing successful anti-poverty measures and their efficacy and replicability in different contexts. In addition, we wished to draw from and build upon the experiences discussed during the International Conference on 'Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia' jointly organised by DSE and ICIMOD in Kathmandu in 2000 (Banskota et al. 2000). One of the suggestions of that conference was to organise or facilitate interactions on the subject at national levels in the region. The need to examine critically the whole issue of poverty during the year also fit well as one of the activities of 2002, which the United Nations had declared as The International Year of Mountains.

It is against this background that the German Foundation for International Development/Food and Agriculture Development Centre (DSE/ZEL), Feldafing, Germany; the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu; the International Fund for Agricultural Development (IFAD), Rome; and the Institute of Mountain Hazards and Environment (IMHE), Chinese Academy of Sciences, Chengdu, jointly organised a five-day International Conference on 'Poverty Alleviation in Mountain Areas with Special Focus on China' from November 11-15, 2002, in Chengdu, China. The overall goal of the conference was to identify key issues related to poverty alleviation and to formulate strategies for a pace and pattern of growth that could alleviate poverty in mountain areas. The specific objectives of this conference were as follow:

- to review conceptual approaches and analyse the trends and future outlook on mountain poverty, particularly in China;
- to review experiences of poverty alleviation strategies and policies in mountain areas;
- to identify appropriate strategies and policies to accelerate poverty alleviation in the mountains, particularly in China; and
- to review IFAD's poverty alleviation strategy for the Asia-Pacific region and its relevance to mountainous areas in China and other countries in the region.

Organisation of the conference: presentations

The Chengdu conference was attended by about 80 participants, including senior government officials engaged in policy and decision-making, academics, experts, and representatives of civil society from Bhutan, China, India, Nepal, Pakistan, and Germany. Representatives of international development organisations, bilateral donors and experts from InWEnt (formerly DSE/ZEL), ICIMOD, IFAD, and IMHE also participated.

The main activities of the conference were presentation of thematic papers, parallel participatory working group sessions facilitated by experienced moderators, presentations in plenary sessions, a field visit, and a concluding session to highlight the principal inferences and recommendations of the meeting.

Altogether 21 papers were presented in the three plenary and two sub-plenary sessions. In Plenary Session 1 on the first day of the conference, five papers were presented. The first paper broadly highlighted the incidence of rural poverty in Asia and the Pacific region and the constraints and opportunities for reducing it. The second paper reviewed the poverty situation in mountain areas of the Hindu Kush-Himalayas, followed by

another paper highlighting the efforts made towards poverty reduction in the mountain areas of China. The next two papers reviewed the conceptual issues relating to poverty and approaches to addressing them in mountain areas.

Plenary Session 2 on the second day focused on past approaches and experiences in dealing with mountain poverty. Four papers were presented. Two dealt with the use and management of natural resources in mountainous areas (one in Western China and another in Bhutan). Two other papers focused on generic issues, one on highland–lowland linkages in a globalised world and another on sustainable livelihoods and poverty alleviation in mountain areas. Development of human resources and off-farm activities in China were covered by another set of two papers. Two papers focusing on tourism (one from China and another from Nepal) were presented on the third day. Two papers were presented on agricultural transformation: one focusing on China and another on Himachal Pradesh, India. The third day's presentations also included one paper focusing on livestock husbandry in Chinese mountain areas and another paper dealing with approaches to the rehabilitation and socioeconomic development of mountain regions affected by construction of the Three Gorges Reservoir on the Chang Jiang River.

Plenary Session 3 on the fourth day focused on strategies and policies. Four papers were presented; two papers focused on the minority regions and backward areas of China. Another reviewed the growth, inequality, and poverty situation in rural China. The fourth paper reviewed IFAD's strategy for rural poverty reduction in China. The synthesis and recommendations of the conference discussions were presented as part of a closing ceremony on the last day of the conference.

Intensive discussions during the working group sessions focused on subjects such as causes and indicators of poverty in mountain areas; natural resource management and its links to development and poverty reduction; highland–lowland linkages and the role of accessibility; human resource development and the situation of minority/tribal areas; tourism and other off-farm industries; and agricultural transformation and migration of rural population. Based upon these discussions, recommendations were made to address mountain poverty through focusing on aspects such as natural resource management and environmental protection, infrastructure and communications' development, local participation and institutional development, human resource development and capacity building, and agricultural transformation and off-farm employment in mountainous areas.

Emerging issues, challenges, and opportunities

Mountain poverty: indicators and understanding

Poverty is a multidimensional phenomenon. Most often its assessment is based on the current level of welfare, disregarding the capabilities of the population to sustain or enhance that level. These levels of welfare are mostly seen in terms of some economic indicators—income or consumption—ignoring the non-economic aspects of welfare and poverty. Most of the concepts routinely used by different development agencies are not very relevant in terms of dealing with poverty in mountain areas. Non-linearity between consumption levels and other aspects of welfare and capabilities are more prominent in mountain areas. Here variations in access to markets, services, and knowledge can lead to drastically different levels of welfare and capabilities, not necessarily reflected in current consumption levels. Indicators based on income, consumption, and access to infrastructure and services are inadequate and at times misleading in the case of mountain areas.

Insecurity and vulnerability, social and political exclusion, unfavourable geographical situations with physical stress, natural hazards, and risks are other dimensions of poverty in mountain areas. Inaccessibility, fragility, and physical marginality lead not only to a limited production base for sustaining livelihoods but, more importantly, result in a high degree of risks and uncertainty in realising the outcomes of livelihood activities.

Limited usable resources; restricted access to natural resources; poor and unstable access to markets, technologies, and inputs; unequal exchange relations with other areas; weak formal institutions and organisations; and neglect of the imperatives of mountain specificities by past development policies and programmes are major factors contributing to the persistence and accentuation of poverty in most mountain areas.

Because of the primacy of biophysical circumstances, there is a strong link between poverty and resource degradation in mountain areas. It is necessary to understand such linkages. It is widely agreed that the poorest sections of society are hurt most by a declining natural environment. The key to understanding the poverty–environment nexus is to focus on the issues of natural resource management systems. The present situation in mountain areas is characterised by decline of traditional practices of resource protection and usage, on the one hand, and selective over-extraction of niche resources by downstream agencies with limited local benefits on the other. The unequal highland–lowland economic links are rooted in the specific patterns of mountain resource use. Unless guarded against, this process may become accentuated with the promotion of

globalised patterns of resource use in mountain areas. Hence, economic policy reforms to benefit from globalisation should incorporate parallel reforms on social, environmental, and institutional aspects to prevent increases in inequality, poverty, and environmental degradation in mountain areas. An integrated approach to environmental sustainability and poverty alleviation has been recognised as a global concern, reflected in the millennium development goals (MDG) accepted by the governments of the HKH region.

Strategies and their focus

Approaches, strategies, and interventions for poverty alleviation in mountain areas have mostly been in the form of replications and extensions of those developed for the mainstream areas in the plains. Often the development strategies have been sectoral, relying on a lead-sector approach, but identification of the sectors has often not been based on the area-specific approach required in mountain areas and location specificities. Likewise, even sectoral development approaches require intersectoral linkages in mountain areas (due to diversities), but this has not been adequately recognised.

Intensification of resource use, narrow specialisation, promoting standardisation, and large scales of operation are other features of plains-based interventions that do not match with the fragility, diversity, and other characteristics of mountain areas.

In light of the above, the first essential requirement for a relevant poverty alleviation strategy in mountain areas is to combine the relevant elements of various approaches and adapt them to mountain conditions. Recognition of the constraints of inaccessibility, fragility, and marginality and opportunities linked to diversity, niche resources, and people's adaptive practices is a basic step in evolving or adapting development interventions to suit mountain areas. Put differently, poverty alleviation and development efforts in mountain areas should have a *mountain perspective,* implying explicit recognition and understanding of mountain specificities and their imperatives.

The conference participants made several suggestions about how to achieve this, and these included the following. (1) Focus on improving the physical access of mountain people to markets, technologies and information, social services like education/ health, and modern forms of energy. (2) Perform critical assessments of niche resources and comparative advantages of each area and develop policies and programmes to harness them by involving the communities. (3) Upgrade marginal resources and

people's capacities and capabilities to reduce their vulnerabilities and poverty. The role of communities and community-based organisations is extremely important in this respect. (4) Recognise and respond to diversity in ecological conditions, resource endowments, and socioeconomic conditions within mountain regions to facilitate area-wide differentiated development interventions. While adopting an area-based approach, it is necessary to combine physical (e.g., watershed) and economic (e.g., market towns) spatial units. In view of the highly diverse landscape of the mountains, resource assessment and development planning must be highly sensitive to spatial variations. Mapping techniques using tools like Geographical Information Systems (GIS), therefore, have particular significance in mountain areas. (5) The immediate policy implication is that the state would have to increase investment in infrastructure and services and also evolve pro-mountain policies to ensure that markets function better and that the risks and effects of market failures are minimised. (6) To harness the benefits of diversity, diversification of mountain economies compatible with market-oriented development will be necessary. This will involve promoting products with comparative advantages and improving people's capabilities to harness them. (7) Pro-mountain policies can be justified not merely on the grounds of equity, but even more on the ground that mountain people must be compensated for the deprivation and costs involved in conserving and protecting their environment which, through the downstream flow of resources and environmental services, sustains the development and livelihoods of downstream people and economies. (8) Development and poverty alleviation in mountain areas can be achieved only if government, civil society, private sector, and international organisations are convinced that the fate of larger national and global economies and societies is closely linked to that of the mountain areas and people. To facilitate this, more systematic work on highland–lowland economic links is essential.

Different approaches have been used to assess the development levels, constraints, and potentials in mountain areas. However, to supplement the qualitative assessments, the reliability and validity of data and the appropriateness of indicators must be evaluated before sound conclusions about regional disparities and other aspects of mountain development may be drawn. The lack of good quality data disaggregated within mountain areas is a major problem in measuring development and poverty accurately.

Poverty in China

Poverty in the mountain areas of China is indicated by low income, food insecurity, poor infrastructure, restricted access to social services (health,

education, drinking water etc.), poor quality of life, and inability to cover basic needs and to cope with risks. The official indicators of absolute poverty are per capita cash income of less than 400 RMB per person per year and grain availability of less than 175 kg per person per year.

The most important reasons for poverty in mountain areas of China are poor access to markets, poor infrastructure, poor access to social services, fragile environments and ecosystems, increasing population pressure, low productivity of agriculture, weak institutions, lack of off-farm employment opportunities, low levels of human resource development, limited investment, lack of benefits to local people in extracting resources from mountain areas, lack of appropriate mechanisms in poverty reduction programme planning, and specific issues related to minorities (languages, education). As discussed by participants from other countries, most of these indicators and causes of poverty are not specific to China, but are common in other HKH countries.

Experiences: regional context

The Asia-Pacific region

Although the Asia-Pacific region, of which the Hindu Kush-Himalayas constitute an important part, has made impressive progress in economic growth and poverty reduction in the last three decades, this region still accounts for nearly two-thirds of all poor people in the world. Poverty is basically a rural problem in the region, and 80–90% of the poor are rural people in all the major countries of the region. However, the poverty trends vary widely from country to country and within countries. Socioeconomic issues such as growing inequality, economic vulnerability, persistence of poverty, and high deprivation levels have emerged as major indicators as well as constraints to reducing rural poverty. Globalisation and economic liberalisation, with side effects that promote inequity, have fuelled the region's rapid economic growth, but they have also increased the vulnerability of these economies to external shocks. Such external shocks can lead to severe economic downturn and rapid reversal of gains in poverty reduction. While poverty may be a transitory phenomenon for many of the poor, it is more or less a permanent condition for many more. The level of deprivation is usually higher than indicated by income figures. The region continues to suffer from very low levels of other human development indicators such as the Human Development Index, the Gender Development Index, and the Gender Empowerment Index.

Poverty in the region is concentrated in less favoured areas such as remote uplands and mountains, marginal coastal areas, and unreliably watered drylands. Major groups of rural poor include women; indigenous peoples

and scheduled castes; the landless, marginal farmers and tenants; pastoralists; coastal fishers; internally displaced persons; and victims of landmines.

The major constraints faced by the poor are lack of access to productive resources, employment, technologies, financial services, markets, and decision-making processes. In the absence of institutions for the poor, their collective strength is weak. The challenge is to tackle the causes of restricted access and control over the use of resources. Changes in access to resources—such as property reform for forests in the uplands and access to finance, technology, and markets—will increase the income and overall capabilities of the poor.

Despite enormous problems, this region has a number of strengths that create a window of opportunity to significantly reduce rural poverty. Most governments have adopted pro-poor policies that provide a conducive environment for effective collaboration between donors and member governments. The region also has a vibrant civil society that is playing an increasingly crucial role both in advocacy and in service delivery to the rural poor. (Unfortunately the disconnection between macro-perspectives and micro-level realities reduces the effectiveness of the above positive developments.) There is a need to build on these strengths and work together to achieve the common goal of reducing rural poverty in the region.

HKH region

The poverty ratios in mountain areas of the HKH region are generally higher than in the plains, although there are strong spatial variations in these ratios. Traditional subsistence economic systems widespread in mountain areas are becoming unsustainable in the context of rapid population growth and inequities caused by increasing external linkages and demand for cash to fulfil basic needs for services such as education and health. Nevertheless, diversification towards high-payoff horticultural and cash crops has been observed in quite a few areas. Other visible changes taking place are the development of urban areas, tourism, hydropower, transportation networks, growing external linkages, and growth in institutions.

Despite these changes mountain people continue to be exposed to greater physical, social, and economic vulnerabilities as a result of poor access to service infrastructures such as hospitals, schools, banks, markets, and so on; and in their turn these result from highly rugged terrain, scattered human settlements, and limited development of transportation networks.

Also, degradation of mountain natural resources—land, forest, pastures, and water—is one of the negative changes observed in this region. As a consequence productivity has declined, creating further chain reactions. Increasing scarcity of labour due to out-migration of many economically active males, landlessness, food deficit, indebtedness, and an increasing burden on women are other changes observed. Some areas have been facing serious problems of unrest and insurgency that stem largely from growing income disparities.

Poverty processes in the HKH are unique due to several factors. Mountain areas in the region are very dynamic and fragile. Frequently they are susceptible to natural hazards causing loss of life, physical assets, and production base. The poor in marginal areas exposed to such hazards are less capable of coping with, resisting, and recovering from them. Their livelihood is further impoverished by man-made disasters in mountain areas. Furthermore, declining access to natural resources; poor infrastructure and service facilities; poor access to information, technology, inputs, and markets; social and political exclusion; feminisation of poverty; weak institutions; and high spatial diversity all contribute to the intensification of poverty processes in the HKH region.

Several approaches and programmes, such as land reform to improve access to natural and physical assets; building infrastructure; provision of input-intensive agricultural technologies to enhance productivity and food security; target oriented credit and employment programmes; development of human resources; and social mobilisation, have been implemented for poverty alleviation in the region. They show a mixed picture in terms of success and failure, as well as significant spatial variations.

An area-based approach based on detailed analysis of comparative local advantages—along with infrastructural, technical, and financial support to manage and mitigate mountain risks—has been an effective strategy for poverty alleviation in China. Similarly, self-reliance, social mobilisation, and strong support services—including research and devlopment (R & D) — are other important factors responsible for diversification of economic activities and reduction in poverty, as shown by the experience of Himachal Pradesh, India.

The mountain areas in the HKH have comparative advantages in a number of products and activities involving mountain natural resources. Poverty alleviation through harnessing local resources, therefore, should stress appropriate natural resource management, including activities to rehabilitate and regenerate resources.

The growth of cereal crops in most of the HKH areas is stagnant, suggesting the need for (1) enhancing their productivity through technologies and input support and (2) diversification of land-based and related economic activities to reduce poverty. To facilitate diversification and harness its gains, improved access to markets, information, and technology is crucial. The development of entrepreneurship to transform present subsistence-focused activities into market-oriented activities is necessary. Here again, collective entrepreneurship is especially important in the context of the highly fragmented resources and limited economies of scale in mountain areas. Such changes require successful human resource development and empowerment of the poor, which will enable the poor to take their own initiatives in reducing their poverty.

Because mountain poverty has a strong spatial dimension, an area-based holistic approach and the active participation of the local community are necessary. Institutional mechanisms for rational and suitable sharing of costs of conservation of mountain areas must be developed because of the benefits that such mountain services offer to lowland areas. Good governance and social mobilisation are other essential activities often mentioned in this regard. Finally, stability and security are prerequisites for growth and poverty reduction.

China

The rural economy of China has been improving since 1978, when reforms were introduced. However, due to historical, natural, economic, and social reasons, some regions have developed very slowly and poverty remains their key problem. The number of poor who were inadequately fed and clothed dropped from 250 million in 1978 to 30 million by the end of 2000, but most of these remaining poor live in areas with extremely harsh natural conditions and living environments (e.g., mountain areas). Hence, the mountainous areas have become the focus of China's efforts to alleviate poverty.

These areas are sources of big rivers and reservoirs of water. Their role in conserving water and soils, and providing other environmental services, is well known. However, due to a lack of adequate understanding and knowledge about mountainous areas, people have exploited mountain resources indiscriminately and destroyed the ecological balance. Nevertheless, mountainous areas retain comparative advantages in several products and services. For example, mountainous areas have abundant natural, cultural, and tourism resources. They are the areas where China's most internationally competitive products grow. This will ensure high gains to China and the mountains with the country's entry in the World Trade

Organisation (WTO). However, harnessing these gains is constrained by the poor external links of mountain areas, long periods of under-investment, low human capacity and organisational support systems—all of which are direct or indirect products of mountain specificities (inaccessibility, marginality, and so on).

Therefore economic development in mountain areas lags far behind. The contributions of secondary and tertiary sectors are very low. The poor technology, the outmoded facilities, the inappropriate production structure, the high proportion of state-owned enterprises, and the slow pace of change are factors limiting economic development. To sum up, mountains are rich in natural resources but poor in the conditions needed to harness them. China has undertaken several steps to change this situation.

Before 1978, development efforts were targeted through a planned economy and government interventions that ignored the role of markets and price mechanisms. Infrastructural development was influenced by considerations of national defence without payng attention to economic principles or linkages with other sectors such as agriculture. Exploitation of natural resources was emphasised rather than developing other sectors such as education, communication, market links, and local capacities and enterprise.

Understanding these gaps has led to new thinking and reorientation of development strategies for mountain areas in China. The key aspects emphasised under the new strategies are: development of basic infrastructure and service facilities; regulation of industrial structure and allocations of resources through markets; focus on public transportation and communication networks (highways, railways, airports, natural gas pipelines, internet, telecom and broadcasting, and so on); promotion of education, knowledge, technology, and information to enhance development of human capacities; reorientation of production structures, industrial structures, and economic structures according to the demands of domestic and international markets; development of industries and activities that harness the comparative advantages of mountain areas such as tourism, agro-industries involving niche products or rural items such as fruits, tea, handicrafts, and so on; small-scale management with the family as its unit to be changed step by step into large-scale production units; externally-driven resource exploitation involving locals; promotion of activities and industries on the basis of market signals, with involvement of local populations; and separate development policies for different areas based on diversity of niche resources and poverty levels as well as the specific factors causing poverty. Emphasis on rich and developed areas

helping the poorer areas is another important feature of China's anti-poverty strategies in mountain areas.

Experiences: sectoral context

Natural resource management in mountain areas

Poverty processes in mountain areas are closely linked to status and usage systems of natural resources. The poverty–environment nexus is more apparent in mountain areas than in any other area. As mentioned earlier, the biophysical conditions of mountain areas generally offer limited and risky production opportunities for rural people. Traditionally, the communities enhanced and stabilised these opportunities through a process of two-way adaptation—adapting (restricting or rationing their demands) to what nature offered them and adapting mountain conditions and resources for enhanced opportunities and increased supplies. Water harvesting, terracing, diversified land uses, and so on all illustrate this. The natural resource use and management systems involved helped to protect resources while using them. However, with the increased population, market pressures on mountain resources and public interventions with inadequate concern for mountain conditions led to disintegration of traditional ways of managing fragile mountain landscapes. Efforts to increase production through indiscriminate intensification led to resource degradation and consequent reduced production. This scenario characterised most areas of the HKH, including China. China's post-revolution policies, which de-emphasised diversification (sideline activities) and focused on food first (i.e., each area was to achieve food self-sufficiency) accentuated this process.

Accordingly, the extent of environmental degradation shows an increasing trend in mountain areas in China, especially in poorer and fragile mountain counties. In fact the poor counties are those which include a large proportion of fragile eco-environments. The economic deprivation and the survival needs of the poor are the endogenous forces driving environmental degradation. In some areas a vicious cycle of intensification of resource use and poverty is clearly visible. The environmental degradation of poor mountainous areas is manifested in increased desertification, soil erosion, landslides and debris flow, and so on.
In the light of the above, ecological regeneration is being emphasised as the core of sustainable mountain development. For this the links between ecological recovery, resource exploitation, technological progress, and poverty-alleviation efforts should be carefully understood and promoted. However, full consideration must be given to farmers' interests and capacities during the implementation of environmental regeneration

programmes such as wild wood protection, returning farm land to forest, water and soil conservation, and ecological afforestation.

In the field of environmental protection and conservation in mountain areas, Bhutan's experience and achievements are unique and impressive. Facilitated by respect for traditional values and low population on the one hand, and cautious and conservation-oriented farsighted policies and legislation on the other, the country has succeeded in preserving its environmental resources. The situation in other HKH countries is quite mixed, with some pockets of well-managed environments within largely over-exploited, degraded environmental resources.

State policies are identified as a major factor behind the poverty of mountain people despite their rich natural resource base. In all HKH countries, the main benefits linked to natural resources from the mountain regions (e.g., gains from tourism, hydropower, mining, timber, NTFPs, and so on) go to the lowland society. Non-involvement of local communities in harnessing the resources is a key factor causing this. The issues debated and partially acted upon relate to (1) resources directly used by rural people like community forests, pastures, water bodies, and so on and (2) the major resource endowments of mountain landscapes such as minerals, timber, hydropower, and so on. Regarding the first, efforts at change include user-group forestry (Nepal), joint forest management (India), and various programmes in China. China's approach and efforts in this regard will be described below.

In China's initial phase of development, control and management of forest and grassland resources were centralised, but soon it became clear that sustained conservation and optimal use were only possible if the control, management, and economic benefits were given back to the rural population. However, it is also felt that, due to population pressure, inefficiency of resource use, and lack of facilities and awareness about sustainability of resources, simply leaving control of natural resources to local communities would not be enough. Hence, the Chinese government is promoting policies involving land tenure and compensation mechanisms; capacity building, education, and training of local populations; stakeholders' participation and community-based management; and recognition and use of local people's knowledge, experience, and ideas.

Efforts are also being made to introduce best practices in various land-based and other locally-centred activities to help both environmental regeneration and poverty reduction. They include diversification with high-yield cash crops and animal husbandry, eco-tourism, and ecosystem

restoration through conversion of marginal croplands into forest and grasslands. Due consideration is advocated for measures directed to reduce, reuse, and recycle natural resources, integrated multidisciplinary planning based on the rationale of traditional knowledge, site-specific and conservation-oriented development activities, and so on. Technologies such as water harvesting, contour planting, and other soil–water conservation techniques are advocated for sustainable management of natural resources. The role of government in facilitating the above changes in China is considered very crucial.

Highland–lowland linkages

The poverty of mountain communities and its persistence despite the rich natural resources of mountain areas are both a cause and consequence of unequal highland–lowland economic links. Highlands and lowlands are endowed quite differently in terms of resources and production opportunities. This forms the natural basis for complementary economic links between the two. However, such exchange-based complementary relationships have been replaced by unequal highland-lowland links. Inequality of highland–lowland economic links and persistence of poverty in mountain areas are rooted in factors like limited accessibility, fragility, and marginality (as constraints) and diversity and niche resources (as potentials not easily harnessed by mountain communities due to the above-mentioned constraints). Furthermore, the lack of serious and appropriate efforts towards raising resource productivity in fragile mountains, sustainably harnessing and regenerating niche resources, and ensuring equitable trade links based on mountain perspectives are also rooted in the socioeconomic and geopolitical marginality of mountain communities and their invisibility and voicelessness vis-à-vis the lowland mainstream systems. Consequently, exploitation and trading of niche resources have been promoted and facilitated by lowland policy-makers without the significant involvement of local communities. Furthermore, export flows from mountains are neither appropriately priced nor do they receive full compensation. This is all the more so in the case of semi-managed natural resource flows from the mountains. They include invisible environmental services or gains in terms of groundwater discharge, nutrients, biodiversity elements, silt-free water flows, physical stability of downstream watersheds, and so on that are directly related to conservation and protection of highland watersheds by mountain people. For want of proper economic assessment and lack of pricing, these services remain uncompensated.

The negative side effects of external links (i.e., unequal highland–lowland links) may further accentuate during the globalisation era, due to the well-known tendency of market-led processes to ignore negative

externalities and nonprofit concerns, while using and integrating mountain areas into wider economic systems.

The welfare-cum-development resource flows (social transfers) from lowlands to highlands are important, but these flows continue to be disproportionately lower compared to both the economic flows from the mountains to the plains and the needs of the highlands. Consequently, the highlands continue to suffer from under-investment, leading to poverty and underdevelopment. Furthermore, the charitable resource flows to the uplands from the lowlands are likely to decline in the era of globalisation, as a consequence of market-driven resource allocations and the reduced role of the public sector.

Patterns of highland–lowland links are changing. The most crucial change relates to efforts to improve accessibility and promote local capacities in terms of both human resource development and promotion of commercialisation involving high-value tradable products. China has adopted specific policies (i.e., developed areas made responsible for helping poor areas to develop) that may help reverse the past pattern of highland–lowland resource flows.

China's experience shows that the nature of highland and lowland linkages is different in different contexts (e.g., at local level to regional scales). China has adopted four approaches to tackle the negative influences of highland–lowland linkages: a logging ban, sloping land conversion, watershed management (soil and water conservation), and integrated rural development. The short-term effects, however, vary under different programmes. For instance, highlanders have to bear the cost of the logging ban as they lose jobs and access to forest by-products (NTFPs) as sources of income. At the same time, lowlands are benefited due to the reduced risk of floods and soil erosion without compensating the highlanders.

In such situations the key issue is to identify the best way to compensate for environmental conservation and long-term sustainability of lowland watersheds. As already mentioned, 'poor area–rich area collaboration' in development of poor areas is one option.

Off-farm activities and tourism

In the experience of China and other transformed areas of the HKH, the overall process of development or enhancement of household incomes in rural communities is highly correlated with the growth of off-farm industries. However, the growth of off-farm activities is comparatively low in mountainous areas; and the main off-farm activities in mountain areas of

China are related to ecotourism, hydropower and mining, transportation and telecommunication, green foods and natural herbal medicines, ethnic handicrafts and circular labour migration, and so on. Vast opportunities exist to develop these activities. To harness their potential, the whole economic and industrial structure of mountain areas would need to change. However, development of off-farm industries in the mountains must be in keeping with the unique features and conditions of mountain areas. In many cases constraints could be transformed into opportunities.

Tourism is one such activity where constraints to development—remoteness, difficulty of access, the natural and biological diversity, wilderness, insular cultures, and subsistence-focused ways of life—can be transformed into opportunities. If properly managed, the backward and forward linkages of tourism can enhance employment opportunities in mountain areas.

Nepal could be considered a leader in promoting and using mountain tourism as a major economic activity, and other countries are giving increasing attention to this sector. But tourism does not spontaneously become an activity that benefits the poor. It needs to be planned and managed to achieve those ends through an effective partnership with all relevant stakeholders, including rural communities themselves. Specific efforts are required to integrate tourism into local development opportunities and efforts.

Mountain areas in general require a sensitive approach to the promotion of tourism for various reasons. Inaccessibility and remoteness call for building local capability and support systems to help better external links. In view of the scale-sensitivity of most activities in mountain areas, the scale of tourism has to be harmonised with the carrying capacity of the areas. Sensitivity to fragile resources and balancing of ecological and economic concerns are of equal importance. Failing this (as observed in many areas), the unique mountain environment that induces tourism becomes a victim of tourism.

In the past, tourism has induced the development, expansion, and reorientation of settlements along trails and tourist destinations. Not all such developments have been systematic, positive, or sensitive to mountain conditions. As tourism develops, the spatial dimension of growth requires careful monitoring and changes. Participatory land-use planning in nodal locations is important to ensure orderly growth of settlements, environmental safeguards, and protection of the poor against losing their meagre resources and earning opportunities due to tourism as an externally linked, highly commercialised activity.

The type of tourism has a bearing on the impact on poverty as well as on area development. In mountain areas trekking and mountaineering tourism has more potential for poverty alleviation than other forms of tourism (e.g., luxury tourism). Development of local enterprises and links with tourism networks are another essential steps. As of now only a few individual entrepreneurs plus porters can benefit from tourism. The poor are not aware of the opportunities opened up by tourism, and the lack of organisation, training, credit support, and policies and programmes to benefit the poor are major issues to be addressed.

Apart from such general concerns, some areas may have specific factors to be addressed while promoting mountain tourism. This is illustrated by Tibet. There are abundant tourism resources in the Tibet Autonomous Region. However, promotion of tourism is constrained by strong seasonality, poor infrastructure and quality of services, limited development investment, lack of skilled human resources, the high cost of transportation, and difficult access. Moreover, the fragile eco-environment and growing concerns for protection of cultural diversity put some restrictions on rapid tourism development in Tibet.

In light of the above discussion, development of tourism should be guided through four basic principles. It should be economically feasible, equitable in the distribution of gains, environmentally friendly, and culturally sensitive. Apart from general funding support, pro-poor policies and mechanisms to help share tourism revenues with local communities (as in Nepal) are needed. Infrastructural development, linking tourism demand with local production, and development of human resources are strategies to deal with the equity aspect.

Human resource development

People in mountain areas generally are poorly equipped to participate in present-day development processes; hence the strong need for human resource development in mountain areas. 'Human resource' means the sum total of labour capacity (intelligence, stamina, technique, and psychology) latent in a population. It is a key factor for economic development and poverty alleviation. The key elements for human resource development include formal and informal education, technical training, and others that enhance the quality of a population.

It is essential that governments increase inputs and investments to ensure that every child, including the girl child, has an opportunity for education. From time to time informal education is important for organised needs-based technical training. In China, community-organised training, pre-

employment training, training of women, needs-based practical and vocational training, and training of prospective migrants and lead farmers are all emphasised using inputs from various sources and international assistance.

Mountain areas generally lag far behind in terms of these steps to help build human resources. The major constraint to education in mountain areas of China is very low investment in education, reflected by poor quality of teachers, inadequate laboratory facilities, poor housing infrastructure of schools, and instability in teaching institutions. Nine-year compulsory education and three-year senior school education are parts of China's education system, but the dropout rate is high, and higher education is very costly. Several poor, resource-scarce counties cannot afford it. In such a situation establishing facilities for distance education through modern information technology becomes important. Specific vocational education is needed, and techniques to promote it are now available. Learning while working is emphasised by several industries and agencies.

Transformation of agriculture

Despite low productivity, agriculture continues to be the major occupation of mountain communities. In most mountain areas poor access, the high cost of mobility and transportation, the shortage of investment, the low level of technological inputs, the persistence of traditional production systems, and the low level of service facilities continue to cause low productivity of crops and related agricultural activities. Enhanced productivity, diversification of agriculture involving high-value crops, and effective market links—along with promotion of off-farm activities—are important steps for raising the incomes of farmers and other rural poor in mountain areas. The changes emerging in several mountain areas and recent policy-programme shifts in HKH countries incorporate some of these requirements.

In several parts of the HKH, the process of emerging change involves increases in both the level and the quality of products, gradual extension of modern facilities to mountain areas, visible improvement in infrastructure, ecological rehabilitation, development of market economies, increased demand for science and new technological inputs, and so on. In China the latter range from new cultivars to balanced fertilisation, from water-saving irrigation technologies to bio-control of pests and low chemical use in mountain agriculture.

Being natural or organic food products, most mountain products can command high prices. But many of the products do not yet enter the

market easily and at appropriate times due to the small scale of production on the one hand and a lack of storage and transportation facilities on the other. Also, technological innovations move into mountainous areas slowly, as most farmers do not accept new technologies until gains are demonstrated. This calls for training and convincing demonstrations.

Animal husbandry is a major component of mountain farming systems that is also undergoing change. In Nepal, India, and Bhutan, stall feeding of productive animals is increasing. In China animal husbandry is changing from a household sideline activity to a main industry of the rural economy. This has helped peasants and herders to break away from poverty. Along with the land contracting system and a series of policy measures that allowed private farming, choice for self-management, free market pricing, etc., the rural mountain areas now have better economic conditions for specialised livestock farming. With consumer preferences changing from quantity to quality of food and choice for organic products, the market for animal products from mountains is rapidly widening. However, in many high elevation mountain areas where nomadic animal husbandry is practised, the situation has not yet changed. High seasonal variability in fodder and water availability and longer and longer migration distances persist. These factors obstruct market-based opportunities for development. This is a big challenge in improving the economic conditions of the poor.

The validity of these approaches is reinforced by the experiences of Himachal Pradesh in India, several mountain counties in China, and parts of northern Pakistan and Nepal. Himachal Pradesh, despite difficult mountain terrain and associated constraints, has performed better than the all-India average regarding many socioeconomic indicators like life expectancy, infant mortality, total fertility, etc. The key factors contributing to rural transformation in the state included a development strategy responding to mountain specificities; high allocation of resources to the agricultural sector coupled with creation of basic infrastructural facilities; high priority and support to horticulture and high-value cash crops generating employment in a number of non-farm activities through strong backward and forward linkages; availability of vast lowland markets for fruit and off-season vegetables; high levels of preparedness on the part of farmers, awareness, and market consciousness; political commitment and patronage by the state government; appropriate price support programmes and a vast R & D infrastructure; and self-help institutions that played an active role in promoting cultivation of high-value cash crops. With some local variations, most of the factors and processes characterising Himachal Pradesh are visible in different mountain areas of China, Nepal, and Pakistan.

The process of rural transformation in mountain areas is, however, challenged by a number of problems: economic reforms and falling state support, and trade liberalisation policies promoted by the WTO. Strong support for R & D and local value-adding activities are necessary for the sustainable transformation of rural economies in the changing, market-oriented context.

Agricultural transformation within the HKH could help increase incomes and fulfil the basic needs of mountain people. It can also help to promote regional exchange, better local supply of products, and sustainable use of natural resources.

Migration of rural populations

Migration is one of the most important strategies of mountain people in coping with the economic and environmental hardships of mountain areas. Both permanent and seasonal migration are common. The territorial mobility of people can be divided into two kinds—voluntary and involuntary—depending on the main reason and the mode of movement. In China, and to an extent other countries, there has been an increasing trend of both types of migration. Frequent natural disasters (e.g., landslides, debris flow, avalanches, droughts, and so on), decline in production base as a result of degradation of natural resources, lack of off-farm employment opportunities, surplus labour force, poor service infrastructure, and disparity in the pace of regional development are some of the factors pushing migration. Moreover, acquisition of land for construction projects such as dams, reservoirs, roads, mining sites, and environmental protection projects like nature reserves has increased the incidence of involuntary permanent migration from mountain areas in a number of HKH countries. Attractive job opportunities outside are important factors, although for want of requisite skills and capabilities, migrants often land up in poorly paid jobs.

Migration from mountain areas has both positive and negative impacts on poverty alleviation. The temporary migrant sends remittances home and brings information and technological knowledge. As a consequence, local skills and capabilities are improved and help in initiating new enterprises. Migration also indirectly contributes to poverty alleviation. The pressure on scarce mountain resources decreases due to out-migration, though, in most situations in Nepal and India, out-migration involves only male workers. This leads to an increased work burden for women. The increased pressure on urban labour leading to unemployment of large numbers of migrants is another negative consequence. The major challenge at present is to make these migrants more productive through improved

skill training, etc. Special consideration should be given to people displaced due to construction projects and environmental protection activities. These people should be resettled and given adequate compensation. Special packages for resettlement and overall development of displaced people should be designed and implemented. Despite enhanced advocacy for such measures and associated protests by NGOs, this continues to be a poorly addressed aspect of forced migration.

Poverty alleviation in minority regions of China

Most minorities in China live in mountain areas. Harsh biophysical conditions; poor access to resources, information, technology, and decision-making processes; low levels of self-development facilities; and adverse impacts of several macro-economic policies are the main causes of poverty in minority areas. These areas are generally characterised by a single-industrial structure based on agriculture, low levels of productivity, high population growth, low per capita income, subsistence orientation, and poor infrastructure and living conditions. For overall development of such poverty-stricken areas, emphasis should be placed on development of physical infrastructure and service facilities. Because the niche resources of such areas are exploited for the benefit of mainstream national economies but very little gains flow to local communities, development of human resources through education, training, and so on to strengthen the ability for self-development of people and harness the comparative advantages of areas based on their niche resources will help. Area-based and target-group approaches should be combined. The compensation for their resources exploited for use by the mainstream national economy should be an important measure to help minority nationalities. Such a compensation system could replace the charity-oriented approach of the state towards poor and minority areas.

IFAD's approach to reducing poverty in marginal upland areas of China

IFAD (The International Fund for Agricultural Development) was the first international financial institution to assist China in 1981. All IFAD's ongoing projects in China are in remote mountainous areas. Several activities have been promoted in joint IFAD/WFP (World Food Programme) projects since 1996. As the first step towards poverty reduction, a vulnerability analysis and mapping (VAM) methodology for China was developed jointly by WFP and IFAD. Counties were classified according to poverty and vulnerability to recurrent and severe food shortages. A strategic approach to poverty reduction was based on two major thrusts: (a) improved efficiency of interventions directed towards the poor (household- and village-based approach) and (b) a long-term strategy and related funding for remote

mountainous regions with high concentrations of absolute poor (an area-based approach).

The project combines geographic targeting of poverty stricken areas with a multi-sectoral programme of interrelated and complementary activities. They include: (1) strengthening infrastructure and service systems for agricultural production to expand productivity and potentially increase food security and creating cash-generating activities through livestock, cash crops, and off-farm income-generating activities; (2) providing technical support and training to build productive capacity and to improve the creditworthiness of the beneficiaries; (3) enabling better access to credit for viable productive activities; and (4) improving access to health and education facilities to increase labour productivity and heighten the population's learning capacity. The project involves a participatory approach, sensitivity to gender issues, and empowerment of the poor. Given the general indifference to mountain areas by some donor groups due to the small numbers of people involved, this initiative is quite unique and pro-poor. This approach has also been extended to other parts of the HKH region.

Major inferences

The following inferences summarise the conclusions of the conference. Depending on the audience, they could form the basis of specific recommendations.

A time to give high priority to mountains

1. The foremost issue emerging from the conference deliberations was the need for specific attention to mountain areas and communities in development policy and planning. This is necessitated not only by the persistent poverty and underdevelopment of these areas causing huge regional imbalances, but also by the off-site (downstream) negative consequences of poverty in mountain areas.
2. Viewed from the dominant mainstream (lowland) side, the poverty of mountain areas and communities is also a consequence of mainstream indifference and extraction of mountain resources for lowland benefit with little involvement of and or gain going to mountain communities. The required undoing of the consequences of past approaches (manifested by chronic under-investment, stagnation, isolation, marginalisation, and so on) and compensation for past neglect of mountain communities by mainstream policy-makers are strong enough reasons for giving greater attention to developing mountain areas.

Mountain development with a mountain perspective

3. Approaches and strategies to alleviate poverty and develop mountain areas must realise and understand their strengths and weaknesses from a development point of view. This implies conscious understanding and consideration of diverse mountain specificities (inaccessibility, fragility, marginality, diversity, and so on) and their imperatives when designing and implementing development interventions. Mountain development strategies should have a clear mountain perspective. Since mountain specificities and imperatives are interlinked, development has to have a strongly integrated approach. For example, roads to reduce inaccessibility cannot be considered without having concern for the landslides they may cause.

Focus on capacity, not charity

4. Past approaches that tried to help mountain areas and people through charity or subsidies are no longer possible in the context of globalisation and associated economic reforms that give primacy to market-driven decisions and give a reduced role to the public sector. Hence, future development interventions in mountain areas will have to depend on the resources and capacities of these regions. Mountains are often described as regions with rich resources and poor people. The focus will have to be on building the capacities and capabilities of mountain communities to harness their rich potential of resources and act as equal partners in the market system. This will require relaxing biophysical and other constraints through infrastructure and effective external market links. For historically neglected areas and communities, fulfilment of these tasks requires strong support from the state and private sector through investment, technologies, and institutional arrangements. The cost of such support may be quite small once the historically under-priced or uncompensated resource and product flows from uplands to lowlands are realistically priced and receive compensation through equitable highland–lowland economic links. To ensure fuller gains from equitable highland–lowland economic interaction, considerable restructuring and strengthening of activities at sectoral and other levels will be essential.

Understand mountain poverty

5. Helping people escape from the poverty trap is a big challenge. In the final analysis, poverty alleviation takes place through highly efficient and productive activities in different sectors and areas. However, poverty is a multidimensional phenomenon. Conventionally poverty is seen in terms of income and consumption levels (or welfare levels) of households. This tends to disregard the capabilities and circumstances of the population to enhance and sustain welfare levels. This is more

important in mountain contexts, where primacy of biophysical conditions and their imperatives reduce the relevance of conventional concepts and yardsticks to judge poverty or welfare levels. This is because of the high degree of insecurity and vulnerability, social and political exclusion, unfavourable geographical situation and physical stress, and natural hazards and risks characterising mountain habitants. Both poverty evaluation and responses need to be differentiated from approaches focused on the plains.

Sectoral context of poverty alleviation

6. The processes and manifestations of mountain poverty relate to different sectoral activities, including the following.

The primary step

a) To enhance capacities and capabilities of mountain areas and communities to initiate and participate in development/poverty alleviation processes is to reduce their constraints and limitations. The biophysical aspects of the latter require measures to reduce isolation, natural hazards, risks, and vulnerabilities. Reducing socioeconomic constraints, on the other hand, calls for measures for human development and restructuring of institutional arrangements suited to specificities of mountain areas. A related aspect is to enhance local access, capabilities, and facilities to harness rich resources. The above measures imply appropriate responses to mountain conditions.

Agriculture

b) Shifts must take place in the agricultural sector (including crops, livestock, horticulture, and so on) which continues to provide the major employment for mountain communities. While focusing on diversification, elements to be strengthened or introduced include appropriate technologies, equitable market links, and enhanced skills and capabilities of farmers. The success stories from different regions indicated the possibility of such changes.

c) The niche resources and products of mountain agriculture should be focused upon to benefit from the new opportunities created by globalisation. Here again, successful experiences of some areas in the HKH region can offer a lead.

Natural resources

d) Because of organic links between agricultural activities and natural resources in mountain areas, agricultural transformation has to be integrated with natural resource management. This should integrate indigenous knowledge and practices with new options provided by R & D-based technologies and changing market processes.

Poverty–environment nexus

e) A related issue is the fuller recognition of the poverty–environment nexus in both negative and positive contexts. Measures to enhance positive links should include local access to local resources, participatory management, focus on diversity of environmental resources, and differentiated measures to address them.

Trade and off-farm activities

f) The gains of efficient management of niche resources must accrue to local communities through realistic pricing and equitable trade links with downstream economies.

g) Value-adding activities (e.g., agro-processing) and high-value products and services (including medicinal herbs, organic farm products, tourism, and ethnic handicrafts) are potential ways to reduce poverty in mountain areas. Promotion of off-farm activities has to focus on harnessing local opportunities, as many areas in the HKH region have successfully attempted.

Tribal/minority areas

h) Measures and strategies implied by the above suggestions will have various results for different mountain communities according to their physical and social locations. Specific groups to be identified include tribal or ethnic minorities in isolated and more backward areas. De-marginalisation of such groups and their integration as equal partners into the social mainstream without damaging their unique culture must be addressed through various, special programmes. Such marginalised groups are already helped through various interventions, but with mixed success.

Information intensity of mountain development

7. Advocacy of the measures mentioned above must be translated into ground-level policies and programmes. The Chengdu conference discussed various options and their impacts. To enhance the range of such options, and to understand their processes and outcomes, a useful and cost-effective approach will be to periodically facilitate mutual leaning and exchange of experiences among different mountain areas. The utility of such an approach was amply demonstrated at the conference.
8. Due to diverse mountain specificities, mountain development is an information-intensive activity. The time and costs involved in accumulating information, analysis, and usage can be reduced through exchange events and use of modern scientific techniques such as GIS. Modern information technology can reduce the impacts of physical inaccessibility significantly, as shown by recent experiences in trans-Himalayan areas of Nepal and India.

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Chapter 2

Rural Poverty in the Asia-Pacific Region: Incidence, Constraints, and Opportunities[1]

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Introduction

The Asia-Pacific region, with a land area of 2,248 million hectares (ha), covers 17% of the world's surface, but its population—3.2 billion in 1997—accounts for 55% of the world's total. Over the last three decades, the region has experienced an unprecedented economic transformation and a significant reduction in poverty. Although many parts of the region gained, others were bypassed by the 'economic miracle'. Further, the region has experienced huge changes in demographics, in environment, and in its socio-political situation that will have significant implications for future economic growth and poverty reduction.

Economic trends

In the last three decades, regional economic growth has been high, with the gross domestic product (GDP) of East and South-east Asia growing by 7–10% annually and the economies of South Asia growing by 4–6% annually (IFAD 2002). Even accounting for population growth, the region achieved a significant rise in income: from 1975 to 1995, gross national income (GNI) per capita grew by 7.3% per annum in East Asia, 4.4% in South-east Asia and the Pacific, and 1.4% in South Asia.

Studies show that agricultural growth contributed significantly to this economic change; for example, the countries that grew earliest and fastest experienced rapid progress in agriculture in the first stages of growth. More importantly, this growth was broadly based and associated with increasingly egalitarian distribution of land. Economic growth in the region

[1] This paper draws on IFAD's Assessment of Rural Poverty—Asia and the Pacific (IFAD 2002). The present author was one of the principal authors of that report.

was also helped by stable macroeconomic policies, relatively open trade policies, and substantial investments in education and infrastructure.

From 1975 to 1995, poverty in East and South-east Asia was reduced by two-thirds; in South Asia, where the economy grew more slowly and population growth had been more rapid, the incidence of poverty declined by one-third. Despite this impressive achievement in poverty reduction, the Asia-Pacific region still accounts for two-thirds of the world's 1.2 billion poor. Also, poverty incidence as measured by the headcount ratio is higher in South Asia than in any other region of the world except sub-Saharan Africa.

Demographic trends

The relative size of the rural population in Asia and the Pacific declined from 75% in 1980 to 67% in 1996 (Bloom et al. 2001). Although urbanisation has reduced the population growth rate in rural areas, the rural population still exceeds 50% of the total population in two-thirds of the region's countries, including the five largest ones—Bangladesh, China, India, Indonesia, and Pakistan. From 1995 to 2010, the rate of urbanisation in the region was projected to be 9% per annum, and the rural share of the total population in 2010 is expected to drop to 56%. Increasing urbanisation, combined with rapid income growth in the region, is expected to lead to a shift in diet from coarse grains to rice and then from rice to wheat, as well as increased consumption of livestock and dairy products, vegetables, and fruit. This will create opportunities for growth in agricultural productivity and processing.

The region continues to have strong gender inequalities, and women continue to suffer severe social deprivation. While the worldwide ratio of women to men is 106:100, in this region it is only 94:100. Computed from the biological trend, an estimated 74 million women are simply 'missing' in South Asia in comparison with the norm. This phenomenon is largely attributable to the sheer social and economic neglect of women.

Demographic transition in the region is also leading to changes in population structure. As fertility rates decline, the ratio of dependants to working-age people (aged 15-60) is decreasing. In East Asia, this factor is estimated to have accounted for a growth in real GDP per person of 1.7% per year from 1970 to 1990. If income inequality does not increase, this helps the poor, as each percentage point of growth normally produces at least a comparable fall in the incidence and severity of extreme poverty.

While the world's attention has justifiably been focused on the ravages of HIV/AIDS in Africa, the disease is spreading at a faster pace in Asia. Since

1994, the rate of HIV incidence has more than doubled in the region, and epidemiologists expect that Asia will be the next epicentre of the pandemic. HIV/AIDS is increasingly affecting the rural poor, and the threat of this disease-if not checked-will weaken the benefits of the above-mentioned demographic potential.

The environment and natural resource management

Worldwide, 1,900 million ha of land have been affected by some level of land degradation during the last 45 years, the largest area (about 550 million ha) being in the Asia-Pacific region (UNEP/ISRIC 1991). The drier areas are particularly vulnerable, and an estimated 1.3 billion people (39% of the region's population) live in areas prone to drought and desertification (UNEP 1997). Soil degradation (erosion, loss of fertility, and structural decline) is a significant problem across all the region's agroecological zones.

The forest resource base is also being depleted rapidly. In the process of deforestation, vast expanses of naturally fragile land, particularly upper catchment areas, have been exposed to soil erosion. In the past half century, the rich biological resources of the region have been increasingly exploited, both for international trade and to sustain the growing population.

Demand for water will increase. While agriculture will continue to use most of the freshwater available, a major issue in many countries will be allocation of scarce water resources among competing sectors. The quality of freshwater is already one of the most pressing environmental problems in many parts of the region.

Poverty incidence and trends

The following analysis of regional trends in poverty over the last three decades aims to identify successes and failures in poverty reduction, as well as intra-regional differences in poverty outcomes. The poverty measure used is the dollar-a-day poverty line, which reflects what it means to be economically poor in the world's poorest countries.[2]

Overall poverty

Some 1.2 billion people in the world are estimated to consume less than a 'standard' dollar a day and are therefore in 'dollar poverty'. Although

[2] The dollar-a-day poverty line, computed at 1985 PPP conversion factors, was representative of the ten lowest poverty lines in low-income countries. Using an expanded set of PPP ratios for 1993, the poverty line works out to about USD 1.08 a day, representing the median of the lowest ten poverty lines.

the Asia-Pacific region's share of the world's total poor declined by 8.6% between 1987 and 1998, this region still accounts for roughly two-thirds of the total poor (World Bank 2001). Using the headcount ratio, two-fifths of South Asians lived below the poverty line in 1998, while the incidence of poverty in East Asia and the Pacific was much lower at 15.3% including China, and 11.3% without China.

Within the region, progress in poverty reduction has varied widely. The headcount ratio dropped dramatically for East Asia and the Pacific, from a high of 24% in 1987 to 15% in 1998, but the decline was more modest in South Asia (45% to 40%). Poverty incidence, as measured by the headcount ratio in 1998, was higher in South Asia than in any other region of the world, except Sub-Saharan Africa.

Rural poverty

About 75% of the world's dollar-poor work and live in rural areas, and projections suggest that this will still be the case for over 60% of the poor in 2025 (IFAD 2001), and poverty is also basically a rural problem in the Asia-Pacific region. In all countries of the region, except Mongolia, poverty is disproportionately concentrated in the rural areas (Ahuja et al. 1997), and in all the major countries of the region between 80 and 90% of the poor are rural. The headcount ratio is also higher for rural areas everywhere except for Mongolia.

Rural poverty trends vary considerably from country to country. In China, rural poverty declined during 1978-84 because of rising grain yields, a fairly equal redistribution of land among households, rising producer prices, better access to free-market sales, and phasing-in of market prices for cereals (de Haan and Lipton 1998). But between 1985 and 1990, poverty reduction stagnated in the absence of meaningful levels of agricultural growth and rural enterprise development in the upland areas (World Bank 1992a, Ahmad and Wang 1991). The opportunities for quick reduction of poverty through agricultural growth in the less remote and less hilly areas (and in a few remote areas) were largely exhausted by the mid-1980s, and most of the remaining poor are now found in the more remote upland areas. Growth in smallholder agriculture was also a major factor for rural poverty reduction in Indonesia and Malaysia in 1970-80, and in Japan, South Korea, and Taiwan in the 1950s and 1960s.

In India, although the incidence of rural poverty has always been higher than that of urban poverty, the differences have been smaller than in most other Asian countries. The gap declined up to the late 1980s but began increasing in the 1990s. As in China and South-east Asian countries,

such as Indonesia and Malaysia, the decline in rural poverty in India was mainly due to the employment effects of the green revolution. In many countries—including India, China, Bangladesh, Malaysia, Pakistan, and the Philippines—the gap between rural and urban poverty has been widening over time. Indonesia and parts of China have done better because the labour-intensive green revolution was followed by growth in labour-intensive manufacturing and services. An important issue for continued reduction of rural poverty is whether the slow down of growth in cereal output and in employment can be compensated for by labour-intensive expansion of services and manufacturing (de Haan and Lipton 1998). Rural-urban differences in poverty are also lower in Kyrgyzstan, Pakistan, Sri Lanka, and Bangladesh.

Economic growth and poverty reduction

The region achieved high economic growth in the last three decades: the gross domestic product (GDP) of East and South-east Asia has grown by 7 to 10% per annum and that of South Asia by 4% to 6% (World Bank 2001). This simultaneous achievement of high economic growth rates and poverty reduction suggests a positive impact of growth on poverty reduction, and some studies do show that the reduction in the headcount index can be attributed mainly to the growth factor (Datt 1998). However, other studies question the credibility of such findings. Despite economic reforms and consistently high growth rates during the 1990s, there was no change in urban poverty in India, while rural poverty actually rose. This has led some authors to conclude that growth does not trickle down to the poor (Ghosh 2000).

More important, however, is the suggestion from yet other studies that the 'trickle-down' mechanism ignores important aspects of poverty reduction. First, the growth and redistribution components are not necessarily easy to separate, as the Gini coefficients and mean consumption are likely to co-move. This is apparent in data from Uttar Pradesh State (India) from 1959-94 (Gaiha 1998). Second, de-composition (or disaggregation of changes in poverty into growth and redistribution components) cannot capture changes in the composition of the poor and the non-poor over time (Gaiha 1998). Even when an economy experiences both growth and a reduction in headcount ratio during a certain period, a substantial portion of the poor may slip further into poverty. (This number, though, would be less than those who escape poverty.) Further, as Gaiha (1998) argues, if there is a large core of chronic poverty among those who are sick, physically weak, or belong to vulnerable sections of society (such as the lower castes in India), the effect of growth on poverty will be weakened.

Emerging issues

East and South-east Asia have provided the world with a shining example of what economic growth can do for human development, but some of the socioeconomic issues that have recently emerged seem to highlight the limitations of a poverty reduction strategy that focuses on high economic growth alone. These limitations are proving to be major constraints to the reduction of rural poverty.

Growing inequality

Demery and Walton (1999) show that the greater the inequality, the less the poverty-reducing effect of growth. This is an important finding, because recent surveys show that income inequality is increasing in several Asian countries that had achieved both high economic growth rates and significant poverty reduction in the last three decades. Significant rises in income inequality occurred in China, Hong Kong, and Thailand, but there were marginal increases in South Korea and the Philippines (Ahuja et al. 1997). In Thailand, the income Gini coefficient rose from 38 in the 1980s to 50 in the 1990s (Bruno et al. 1996). The poorest received 6.1% of national income in 1975, but only 5.4% in 1981, and 4.6% in 1986. In China, the overlap of rapid growth and stagnant poverty in 1987-93 confirms worsening inequality (de Haan and Lipton 1998). The Gini coefficient increased from 29 in 1981 to 39 in 1995 (World Bank 1997).

A major reason for this rising inequality is the growing disparity in economic growth arising from a concentration of economic activity in certain areas to the exclusion of others. In China, for example, growth rates vary significantly across provinces and between rural and urban areas. In the last one and a half decades, rural-urban and inter-provincial income disparities have grown, leading to interpersonal inequality.

An analysis of some Indian states (Jha 2001) also reveals a rich variety of experiences. Some states that have had high rates of economic growth and enjoyed high per capita consumption show lower inequality and poverty compared to the states lagging behind. For example, the rural Gini for Bihar was 32 in 1957-58, but 39 in 1995-96. Bihar has also had low rates of economic growth and is among the poorest states in India. In contrast, the rural Gini for Punjab, the richest state, dropped from 32 to 24 over the same period, accompanied by a sharp fall in poverty.

Income inequality also increased in some South-east Asian countries after the financial crisis of 1997/98. For example, the share of income accruing to the richest one-fifth of the population in Thailand increased from 55% in 1996 to 56% in 1998, with reductions in shares being spread across

the rest of the population (Hooke et al. 1999). Over the same period, the average real income of those in the richest quintile increased by 1%, while that of people in the poorest quintile decreased by 2%. Thailand was only marginally affected by unfavourable weather and other external disturbances, and this increase in inequality is attributable mainly to the financial crisis.

Economic vulnerability

Globalisation and economic liberalisation fuelled the region's rapid economic growth, but they have also increased the vulnerability of these economies to external shocks. As the financial crisis of 1997/98 showed, such external shocks can lead to severe economic downturn and rapid reversal of gains in poverty reduction. This crisis, which originated in the capital account, had a severe impact on reserves, exchange rates, and interest rates. Most of the short-term capital in Southeast Asian countries had been borrowed by the private sector from abroad, without hedging against foreign exchange currency risks. The rapid growth of volatile portfolio capital relative to reserves left these countries vulnerable to speculative attacks on their currencies.

More generally, vulnerability, as distinct from deprivation, assumed greater importance. The identification of vulnerable households is, however, more difficult than the identification of poor households, since a household's vulnerability depends largely on the magnitude of the shock to which it is exposed. While an illness lasting several days or weeks may push a few households into poverty, an event like the death of the wage-earning head would make many rural households in a developing country vulnerable to acute deprivation/poverty. Also, while households may be able to cope well with household-specific shocks in the presence of well-functioning markets (e.g., credit or labour markets) and community mechanisms, their ability to deal with community-wide shocks is much lower, as these shocks affect everyone in the community (Gaiha et al.2001).

Persistence of poverty

While poverty may be a transitory phenomenon for many of the poor, it is more or less a permanent one for many more. IFAD's experience indicates that a large fraction of the poorest households are persistently poor and, in consequence, IFAD has always adopted a targeting approach to ensure that its interventions focus on the poorest households. From a policy perspective, the distinction between transient and chronic poverty is useful for various reasons (Gaiha et al.2001).

Since the chronically poor are not a negligible subset of the poor, it is important to identify who they are. Chronic poverty is, typically,

characterised by remoteness from needed infrastructure, social backwardness, lack of access to education, disability and age, and prolonged illness. These persistent poor are important target groups, since benefiting them is not possible without such targeting.

The identification of factors associated with movements into and out of poverty is useful in designing safety nets and other interventions to protect the vulnerable. If this is supplemented by a clear understanding of why some households improve their wellbeing relative to others, it would help design policies that promote more equitable growth.

Gaiha and Deolalikar (1993) argue that chronic poverty is largely the result of deep-rooted characteristics that cannot be easily changed in the short- or medium-term. Some of these are readily observed (schooling of the household head), while others are frequently unobserved (managerial ability or industriousness).

A high correlation has been found between severe poverty and chronic poverty: the poorest tend also to be the chronically poor (Lipton 1988). Gaiha (1989) also observed this in the form of the decreasing proportion of the chronic poor in the successive poverty deciles (using 1968-71 data for rural India).

High deprivation level

An emerging issue not directly linked with the side effect of high economic growth is the high level of deprivation that continues to plague South Asia. Like Sub-Saharan Africa, the region tends to show low levels of important social indicators. Despite rapid improvement in infant mortality rate, life expectancy at birth, and adult literacy, South Asia remains the world's second-worst region as far as social indicators are concerned. The region continues to suffer from very low levels for the other human development indicators, such as the Human Development Index (HDI), the Gender Development Index (GDI), and the Gender Empowerment Index (GEM).

The level of deprivation is usually higher than indicated by income poverty figures. A recent World Bank study (1998a) in India shows that according to the 1993-94 round of the National Sample Survey (NSS), about 80% of the rural population did not receive the 2400 calories per adult per day recommended for rural areas, and 70% of the urban population had intakes below the 2100 calories recommended for urban areas. This is much higher than the headcount ratio, which was 37% in 1993-94. In 1993-94, the poorest 30% of India's population consumed fewer than 1700 calories per day, and the poorest 10% consumed less than 1300 calories per day.

Characteristics of rural poverty in Asia and the Pacific

The rural poor in Asia are characterised by a number of general economic, demographic, and social features, but the most common feature is landlessness or limited access to land. Poor rural households tend to have larger families, with higher dependency ratios, lower educational attainment, and higher underemployment. The survival strategy of the poor leads them to strive for relatively large families because, traditionally, the flow of income is from children to parents (a form of old-age care or insurance). As education is a prime factor in reducing fertility, educational deprivation is also a causal factor for higher population growth among the poor.

The poor also lack basic amenities such as piped water supply, sanitation, and electricity. Their access to credit, inputs, and technology is severely limited. Constraints—including lack of information about markets, lack of business and negotiating experience, and lack of a collective organisation—deprive them of the power needed to interact on equal terms with the other, generally larger and stronger market intermediaries (IFAD 2001). Cultural and social distance and discrimination are other factors that may also, at least partly, exclude the poor from markets. Low levels of social and physical infrastructure increase their vulnerability to famine and disease, especially in the mountainous and remote areas of the region.

The following discussion on the characteristics of rural poverty in the Asia-Pacific region suggests that certain groups of people and areas tend to be more vulnerable to poverty than others. The next section will show how these groups are being marginalised.

Who are the poor?

The percentage of rural poor varies by country and within countries of the Asia-Pacific region,. But throughout the region, the major sub-groups of rural poor are the landless, along with marginal farmers and tenants, indigenous peoples and scheduled castes, and internally displaced persons and victims of landmines. Pastoralists and coastal fishermen are important sub-groups of rural poor in certain countries. Within all the above sub-groups, women are hit particularly hard by poverty and female-headed households are particularly prone to poverty.

The poor have less land: Landless households, marginal farmers, and tenants

The percentage of landlessness is high in South Asian countries like India (22%), Bangladesh (49.6%), and Nepal (10%), and landlessness is

increasing over time in many countries. In Bangladesh, for example, the percentage of landless households (defined as those with less than 0.2 ha) among total households was 46% in 1988 but 50% in 1995, and their share of total land had declined by nearly half a percentage point (Hossain 1996). Most of the landless in rural areas are poor and work as agricultural wage labourers. In Bangladesh, 69% of the poor, and 80% of the severely poor, are landless. In South Korea, 88% of the landless are poor. Farmers in rainfed areas are at the bottom of the socioeconomic spectrum in most countries. In Bangladesh, the proportion of people living below the poverty line is 78% in rainfed areas, compared to only 51% in irrigated areas (Government of Bangladesh 1996).

Marginal farmers and tenants are found everywhere in the region, but they predominate in certain countries such as Bangladesh, India (where 28% of the small-scale farmers have less than 0.4 ha), Nepal, and the Philippines. In Pakistan, 44% of the tenant farmers are poor. In Bangladesh, poverty is correlated with the amount of land a household controls (Ravallion and Sen 1994).

Many of the poor are indigenous peoples and scheduled castes

Indigenous peoples

About 70% of the world's more than 250 million indigenous peoples live in Asia (Singh and Jabbi 1996). These peoples are known by different names: 'hill tribes' in Thailand, 'ethnic minorities' in Vietnam, 'minority nationalities' in China, 'scheduled tribes' in India, and 'cultural communities' in the Philippines. The features that distinguish them from the lowland populations include a strong emphasis on clan structures and ethnic bonds, a strong sense of identity, and a relatively higher status for women. Whereas the lowland societies are essentially patriarchal, gender relations among the forest dwellers and the highlanders are more gender-positive, ranging between matrifocal and matrilineal systems and various forms of transition to patrilineal systems.

The incidence of poverty is very high among these people. For example, of the ten regions of India with the highest incidence of poverty, indigenous peoples known as scheduled tribes inhabit four. In 1993-94, when slightly less than 40% of all Indians were below the poverty line, the proportion was 54% for scheduled tribes and 50% for scheduled castes (IFAD 1999a). Though the tribals of India made up only about 8% of the total population, they accounted for 40% of the internally displaced population, another major characteristic of poverty. The literacy rate was only 24% for scheduled tribes and 30% for scheduled castes, compared to 52% for the country as a

whole. Among rural tribals, the literacy rate for women was only 13%, and the gross enrolment rate for girls among the scheduled tribes as a whole was only 27%, compared to 46% for the general population. Tribal children also exhibited higher rates of malnutrition (Dreze and Srinivasan 1995).

In Vietnam, the incidence of poverty among the ethnic minorities—mostly indigenous peoples—ranges from 66 to 100%, far higher than the national average of 51% (Hooke et al. 1999). Per capita incomes are only $100 per annum, against $290 (almost three times as much) for the country as a whole. In China, the average life expectancy in Yunnan province, which is dominated by indigenous peoples, is five years less than for China as a whole (UNDP 1998). In the Wulin Mountain area of China, where indigenous peoples comprise 80% of the population, the per capita income was CNY 521 in 1996, compared to CNY 1792 for the province of Hunan and CNY 1277 for the province of Guizhou (IFAD 1998). In the area covered by an IFAD-funded project in Simao, cash incomes were about 50% lower than those in the areas of other IFAD projects in China, and grain availability was well below the national poverty line of 200 kg per capita (IFAD 1993).

In Bangladesh, more than half the total of 1.2 million tribals live in the Chittagong Hill Tracts, and their lives have been severely disrupted in the recent past (IFAD 1999b). For example, the construction of the Kaptai hydroelectric project rendered some 100,000 of them homeless and submerged about 54,000 acres, equivalent to 40% of the land suitable for intensive cultivation. Some of the displaced families that had settled in the lower hills were displaced again after 1975 by programmes for the resettlement of persons from the lowlands.

Scheduled castes

People who belong to the scheduled castes are among the poorest of the poor in South Asian countries like India and Nepal. In the central Indian state of Bihar, 93% of the people belonging to scheduled castes ('dalits'), and 85% of those belonging to other backward castes, are agricultural labourers (IFAD 1999a). In contrast, 96% of the people belonging to upper castes are landlords and rich peasants. The poverty of the 'dalits' is centred on landlessness, but is not confined to that. Various forms of active and passive social exclusion also operate, particularly at the village level, to make it difficult for them to overcome their poverty. In addition to a continuing relation to access or non-access to land, caste also affects policy and performances in education, both through the factor of land and independently as well.

Pastoralists

Pastoralists are mostly found in the highlands of Mongolia and Kyrgyzstan. In Mongolia, about 20% of the households, many of them headed by women, received less than 10 animals at the time of decollectivisation. This is very much below the viable herd size, forcing them to sell the animals for short-term survival. This depleting coping strategy is a clear sign of their increasing marginalisation. In Kyrgyzstan, the ethnic Kyrgyz pastoralists in the highlands suffered a similar fate.

Coastal fishermen

The fisheries' sector in Asia provides employment to a large workforce, though they represent only a small proportion of the region's vast population. Asia has some 25 million fishers and fish farmers—four-fifths of the world total, and more than double the number counted in 1970 (FAO 1998). In South and South-east Asia, 10.4 million people work as full-time or part-time fishers, about 8.6 million of them in marine fisheries and the remaining 1.7 million in inland fisheries (Hotta 1996). Notwithstanding the major technical advances and industrialisation that has characterised the sector in many Asian countries since World War II, the majority of Asia's fishers are small-scale, independent coastal operators. They are generally among the poorest of the poor. Poverty in the coastal areas is a characteristic of the Philippines, Bangladesh, and Vietnam. In the Philippines, poverty is severe and resource depletion high in many fishing communities. Although recent developments in fisheries' policy have broadened the scope for improving coastal fishing, these communities remain poor due to underdeveloped transport infrastructure (Hooke et al. 1999).

For the coastal fishers, the threat of marginalisation arises not only because of natural disasters, but also because of competition from commercial fishing enterprises. IFAD's study on the Asian Crisis and its impact on the indigenous peoples of Palawan Island of the Philippines observed that a combined effect of the financial crisis and El Niño in 1997/8 had led the fishermen to use dynamite, adversely affecting the fishery resources (Novellino 1999).

Internally displaced persons and victims of landmines

In India, tribals constitute only 8% of the total population, but 40% of them are internally displaced (IFAD 1999a). Large numbers of people also have been displaced by conflict and war. The victims of landmines are mostly found in war-ravaged countries such as Cambodia and Vietnam. One in every 250 Cambodians is a mine victim, and it is believed that 4-6 million mines are still hidden in the country.

Women and poverty

The severity of poverty is always higher for women than for men, and they face greater hardships in lifting themselves and their children out of poverty. Women in the Asia-Pacific region have fewer opportunities than men due to a number of gender biases within their societies, including unequal opportunities for access to education, employment, and asset ownership. Without education, women enter a vicious circle marked by fewer opportunities for employment, early marriage, poor child health care, limited knowledge of contraceptive use, and high fertility. In India, over 90% of rural women workers are unskilled; 90% work in the informal/ unorganised sectors (IFAD 1999a). The wage rates for women in agriculture are 30–50% less than those for men, and female casual labourers have the highest incidences of poverty of any occupational category, male or female.

Amartya Sen (1992) first identified what he described as the 'missing women' in South Asia. The biological norm is that women will outlive men if given similar nutritional and health care. Therefore, the total number of women should be higher than that of men. But South Asia is the only region in the world where men outnumber women. While the worldwide ratio of women to men is 106:100, it is only 94:100 in this region (Haq 1997). Computed from the biological trend, the estimate is that 74 million South Asian women are simply 'missing'. This phenomenon is largely attributable to the social and economic neglect of women in this region. Nepal and the Maldives (both in South Asia) are the only countries in the world where a female's life expectancy at birth is less than a male's, again a reversal of the global biological norm (UNDP 1997).

In Bangladesh, the burden of poverty falls disproportionately on women, whose nutritional intake averages only 88% that of men (IFAD 1999b). Only 29% of women are literate compared to 45% of men. Some 20% of households headed by men are classified 'extremely poor' compared to 37% of female-headed households, and the latter earn 40% less than the households headed by men. Households headed and managed by women constitute 7% of all rural households in Bangladesh. These women-headed households constitute the most vulnerable social group within rural society. In Nepal, 29% of rural women have a body mass index below the cut-off point, an indication of chronic energy deficiency (IFAD 2000). The literacy rate among rural women in 1995/96 was only 17.2%, compared to 51.1% for rural men, and female primary school enrolment stood at 59%, compared to 79% for males.

Women generally have fewer employment opportunities, less occupational mobility, weaker skills, and less access to training (Agarwal 1986). Because

of the greater task-specificity of their work and lower mobility, they face much sharper seasonal fluctuations in employment and earnings, and have less chance of finding employment during slack seasons. In addition, there is a considerable gender gap in access to decision-making authority at national and local levels, including decisions about the use and management of common property resources, particularly village commons.

Where do the poor live?

Geographical variability of poverty

An analysis of the various national poverty lines reveals large regional differences in rural poverty incidence in many Asian countries. In India, in 1993/94, rural poverty varied from 15% in Punjab to 66% in Bihar (IFAD 1999a). When disaggregated by region, the data show a high regional variation in the incidences of rural poverty, even within states. For example, in Maharashtra, the incidence of rural poverty ranges between 24–38% in the coastal and western regions, and 62–66% in the northern and eastern regions. In the Himalayan belt, West Bengal reports the highest increase in the incidence of poverty (27%) between 1987/88 and 1993/94, followed by the Assam Hills (21%), Arunachal Pradesh (19%), and Manipur (15%) (IFAD 1999a). Parts of these areas have suffered from political unrest, others contain a large number of ethnic minorities, and most are dependent on rainfed agriculture.

In Pakistan, in 1990-91, the rural parts of South Punjab had the highest food-poverty incidence among the country's rural areas; while at the same time India's lowest incidence of food poverty was in the neighbouring Indian Punjab, which had experienced similar agricultural productivity growth in the 1970s and 1980s. The high incidence of rural poverty in Pakistan Punjab is attributable to highly unequal access to land, and to the greater labour-displacing mechanisation of agriculture.

In China, poverty is far greater in the resource-constrained remote upland areas, where land is so unproductive that it is not possible for farmers to achieve subsistence levels of crop production (World Bank 1992a). While the proportion of households below the national poverty line is less than 1% in Beijing, Shanghai, Tianjin, and Guangdong, it is 20% or more in Inner Mongolia and Qinghai (de Haan and Lipton 1998). In the Philippines, agricultural productivity also remains very low in the upland areas where poor minority groups are dominant (Hooke et al. 1999). Many of these minority groups have only recently received recognition for their claims to the land on which they have lived for generations. In Indonesia, there is a high concentration of poverty in Java where 61% of the population live,

and some of the country's poorest regions are its upland areas, particularly the limestone hills of Central and East Java. Poverty is also extremely prevalent on Madura, in areas far from the urban concentrations, and in the fishing villages along the coast of west and east Java.

Resource base and poverty

According to one study, 634 million rural poor—of whom 375 million are in Asia—live on marginal and degraded lands (Nelson et al. 1997). Indeed, a large part of Asia's rural poor are concentrated in the hill and mountain regions of China, India, Nepal, Bhutan, Pakistan, Myanmar, Indonesia, Thailand, Laos, Cambodia, Vietnam, and the Philippines. Of the 1,700 million ha of land that make up the continent, nearly 236 million(14%) have slopes exceeding 30%, and a further 664 million ha have slopes of 8–30%. Nearly one-fourth of Asia's absolute poor (some 250 million people) eke out a meagre existence in these areas. They are rainfed farmers, forest dwellers, highlanders, and indigenous peoples. In the Philippines, the incidence of poverty in the upland areas is 61% compared to 50% in the lowlands. In China, almost all of the 65 million officially recognised income-poor live in remote and mountainous rural areas (UNDP1997). In many of these villages, at least half the boys, and nearly all the girls, do not attend school.

Again, in the Central Asian countries, poorer households are mostly found in areas situated above 2,000masl. The sparse and scattered settlements in these areas have poor transport and infrastructure, and poverty is caused mainly by the high costs of transportation and service delivery. The forest dweller and highlander groups include many of the world's indigenous peoples (250 million, 70% of whom are in Asia). Most of the pastoralists are also found on high mountain slopes and plateaux—remote areas with harsh climates.

The majority of the poor live in rainfed cropping areas. Over 65% of the arable land of the Asia-Pacific region is rainfed, and the growth of irrigated areas has declined in recent years. Except for Pakistan and Iran, less than 40% of the total arable land is irrigated. The drylands of the region are home to some 37% of the people in Asia (1.1 billion people).

MAJOR CONSTRAINTS AND OPPORTUNITIES

This section examines the major constraints that the rural poor face and discusses opportunities to overcome their poverty. The experiences of IFAD-funded projects in the region are highlighted in discussing the opportunities.

Access to productive resources

Common property resources

In many areas of Asia, the rural poor rely heavily for their livelihood on the common pool resources[3] available through open-access systems. Examples include water for irrigation, forests, rangelands, fisheries, and wildlife. The important role of these commons in the survival strategies of the poor has become conventional wisdom since the pioneering analysis by Jodha (1986). But an important issue remains: can the commons be avenues for reducing poverty, not just coping with it? A related question has to do with safeguarding the access of the poor to the commons in the context of increasing privatisation or state control.

In recent years, there has been an increasing trend towards devolution of control over natural resources from central governments to local communities. The emphasis of such devolution has been the sustainability of resources to be used by all, rather than poverty reduction through securing livelihoods for the poor. IFAD funded the Centre for International Forestry Research (CIFOR) to analyse various Asian experiences with the devolution of forest management. The conclusion was that the decentralisation of forest management, in China, India, and the Philippines, has been dominated by the agenda of either the Forest Departments or the local elites.

A second problem with commons is that they are almost always open to everyone without regulations or restrictions. As a result many rangelands, water-bodies, and forests are heavily degraded or sub-optimally used due to lack of investment—either in infrastructure or yield enhancement. Since the investor in unregulated commons cannot control the proceeds of investment, investment is not readily forthcoming, and, as a result, productivity declines.

One approach to resolving the dilemmas of open-access or unregulated commons has been to privatise the resource, often by leasing it to the highest bidders. Examples include water-bodies and lakes in Bangladesh, and degraded forestlands for development as fruit orchards in China. In

[3] Common pool resources are those from which extraction is deductible and it is simultaneously difficult to exclude competing users. Rangelands, forests, and lakes are well-known examples of common pool resources. Common pool resources may be managed in at least four different ways: in an open access manner, in which there is no exclusion of users or the extent of extraction/use; as a common property resource (CPR), with definite rules of access and extraction; as exclusive individual property; or as state property. Following the work of Jodha (1986), Ostrom (1990), and others, increasing attention has focused on the possibility of managing the commons as CPRs, with well-defined rules of access and extraction.

India, there have been frequent proposals to allocate 'wastelands' to corporations willing to develop them. Such approaches deprive the poor of their traditional livelihood resources without necessarily providing alternatives such as wage employment.

IFAD has experimented with a range of approaches aimed at enhancing the access of the poor to CPRs, and to improving their productivity. Two important experiences concern the Oxbow Lakes Small-Scale Fishermen Project in Bangladesh and the Nepal Hills Leasehold Forestry and Forage Development Project, where CPRs (lakes and degraded forests, respectively) were leased to the poorest people in the surrounding villages. Both cases demonstrated that 'social fencing' can be effective in safeguarding the benefits of investments, and that sharing income on the basis of labour contributions can preserve the principle of equity. In the Oxbow Lakes' Project, adequate investment support from IFAD allowed the formerly landless labourers and poor fisherfolks to raise their incomes to the level of middle farmers in the community (Nathan and Kumar 2001). Smaller fishponds leased to groups of women contributed both to income increase and enhancement of their overall status within the family and society. In the Nepal project, the hill slopes were used mainly to grow fodder. This generated substantial livelihood benefits for the poor, including women.

Access to land

In many countries of the Asia-Pacific region, marginalisation is linked to the lack of access to land and land-use rights, resulting in income inequality and social heterogeneity that cause many problems in rural areas; but there is considerable evidence that small farms are often more productive than large farms. If access to production inputs and to information and marketing networks can be improved, land redistribution enhances productivity. Security of tenure, if properly implemented, also provides incentives for long-term investments in the land. This is corroborated by IFAD's experience in China and India. In China, it was observed that without secure tenure—of ownership or use rights—shifting cultivators do not invest in the labour and other resources needed to intensify cultivation. In Manmo, a Hani village in Yunnan province, neither increased production due to the irrigated rice terraces, nor the new labour demand for ploughing, transplanting, etc. changed the fallow system on the hill slopes, though it did relieve pressure on the hills. It was only in the 1980s, after land was redistributed to the households, that Manmo, along with other Hani villages, began to change hillside use by planting tea on fallow land. While the surplus from terraced land was important as a source of finance for potential changes to fallow practices, the change itself was apparently triggered by security of tenure.

Historically, except for China, land reform has excluded women. But it is now widely accepted that ownership of land by women is also necessary to stimulate their labour and investment, and to allow them to use their managerial talents to best advantage. In situations of high male out-migration, as in Nepal, Uttaranchal (India), and the dry regions of India and China, women's ownership of land is a prerequisite for the effective use of credit and flexibility in management of farm resources.

Several IFAD projects provide examples to illustrate the importance of security of tenure. Secure land rights are considered particularly important for sloping agricultural land technologies (SALT). The IFAD-supported Orissa Tribal Development Project in India provided titles to land above 10 degrees in slope to tribal groups—a first in Orissa. Land occupied by tribals became transferable to women in the form of inheritable land titles ('donga pattas') in perpetuity. Project supervision missions pointed out that such land titling led to major improvements in natural resource management (NRM), with the incentives derived from clear property rights; and comparisons between project areas where land titling had been granted, and adjacent open access areas illustrated dramatic differences in land quality. The positive impact of this project on NRM has been a central feature of the policy dialogue with the government prior to the second phase of the project, during which the entire state will hopefully be covered.

Due to the opposition of vested interests, the political prospects for redistributive land reform are not bright in many countries, but land reform is still important for poverty alleviation. It helps to change the local political structure at village level by giving more 'voice' to the poor, and encouraging them to get more involved in local self-governing institutions and in common management of local public goods (Bardhan 1996). Local markets also function more efficiently when the levelling effects of land reform improve competition and make it more difficult for rural elites to corner markets. Some aspects of land reform, such as the extension of tenure security, may be less difficult to implement than other aspects such as land ceilings.

To overcome opposition, some governments in developing countries are experimenting with market-assisted land reform.[4] Two prerequisites of this approach are defining and enforcing property rights on land and providing

[4] "Market-assisted or negotiated land reform relies on voluntary land transfers based on negotiation between buyers and sellers, where the government's role is restricted to establishing the necessary framework and making available a land purchase grant or loan to eligible beneficiaries." (Deininger 1999)

the poor with access to credit. A major risk is that much of the land owned by large landowners may be purchased by the rural middle class rather than by the landless. The approach may "open up opportunities for the landless to climb the 'agricultural ladder' from landless workers to tenants, to leaseholders and finally, to owner cultivators" (Hayami 1991), so it is important that governments retain redistributive land reform on the agenda, even if the political coalition to push it as a programme is not yet in place.

Sustainable agricultural technologies

Green revolution technology—based on high-yielding varieties of cereal crops, irrigation, and chemical fertilisers—increased cereal production in Asia in the 1970s-80s, mainly through growth in productivity. By keeping food prices down and employment up, the technology contributed to rural poverty reduction in many countries of the region. However, this technology has been bitterly criticised since the 1970s on the grounds that it focuses on the more favourable areas and that there has been little progress in developing appropriate technologies for less favoured areas such as drylands, uplands, and mountainous areas. Rice yields in rainfed areas are only half of those in irrigated areas, with even lower yields in the upland and deepwater areas (Rosegrant and Pingali 1991). Technological breakthroughs have not been made for crops like sorghum, millet, and cassava—the staple foods grown by the poor, consumed by the poor, and grown on less productive marginal lands. This, coupled with the decreasing arable land per capita, has raised serious food security concerns for the poor; and the data available show that the arable land per capita decreased between 1979 and 1996 in all Asian countries except Malaysia (World Bank 1998b).

The green revolution technology was usually able to reduce rural poverty where there had earlier been improved water control (IFAD 2001). However, there is an impending water squeeze on Asian agriculture with competing demands for water for industrial and domestic uses. Alongside water quality, water depletion is the primary environmental problem for the poor, particularly in the context of global warming and the accompanying less stable rainfall and higher evapotranspiration (World Bank 1992b).

Water management techniques can improve water use efficiency, raise economic efficiency of water, and help the poor if prices, institutions, or the environment are not too unfavourable (IFAD 2001). Intermittent flooding in irrigated rice fields can reduce water requirements by 40% with no significant decline in yields. In the North China Plain, piping irrigation water results in 90% conveyance efficiency, compared with 50-60% for earth canals (Xie et al. 1993). However, these techniques are

capital-intensive and do not help promote employment of the poor. In the hills and mountains of Nepal, low-cost, gravity-fed technologies in sprinkler and drip irrigation for vegetable and fruit cultivation have been shown to enhance income and employment of the rural poor (SAPPROS 2001). However, such systems have not spread to wider areas due to inadequate support on the part of the government and of donors.

IFAD-financed research in Asia has attempted to address some of the main agricultural production constraints of resource-poor farmers in the more fragile, low-potential areas. The focus has been on keeping the use of inputs low despite the inherent low soil fertility and poor/erratic rainfall conditions of the production environment. Some of the Fund's grant-supported research initiatives have generated widespread benefits to small-scale agriculture in the region. Research led by the International Centre for Agricultural Research in Dry Areas (ICARDA) on 'faba' beans led to dramatic yield increases in West Asia. Research at the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) led to development of the world's first hybrid pigeon pea to be bred successfully for resource-poor conditions. The IFAD-supported Eastern India Rainfed Rice Project is making significant contributions by linking formal research to farmers' own methods and experiments in raising rice yields, in developing more robust rice varieties for rainfed conditions, and in augmenting crop incomes.

Given the limitations of high-input agriculture in less favoured areas, sustainable or regenerative agriculture holds enormous promise for yield increases and environmental protection. In such systems, two- to threefold increases in yields have been achieved through community-wide adoption of resource-conserving technologies and practices. Regenerative technologies either conserve and improve existing on-farm resources (nutrients, water, and soils) or introduce new elements (e.g., nitrogen-fixing crops, agroforestry, water-harvesting structures, and new predators). A number of regenerative technologies are now available for upland and mountainous areas as well. IFAD is promoting some of these technologies in more recently formulated projects in India, Indonesia, Nepal, and The Philippines.

Rural non-farm employment

The rural non-farm economy plays a significant role in providing employment and income for the poor in rural areas. As population pressure grows in the land-scarce Asian developing countries, the growth in agricultural production cannot absorb the increasing rural labour force in agricultural employment (IFPRI 2001). The urban industrial sector cannot grow fast enough to absorb the surplus labour released from agriculture.

This leaves the rural non-farm sector to absorb those released from agriculture but not absorbed into urban industries. Non-farm income and employment emerges as a very important source of income and employment, and therefore as a means to alleviate rural poverty.

China provides an excellent example of how a rural development strategy focusing on the non-farm sector can bring about a significant change in the structure of the national economy. This is in addition to boosting the rural economy, increasing farmers' incomes, and contributing to poverty reduction (Huang and Rozelle 1999). The effects of developing rural enterprises reveal the importance of expanding non-agricultural sectors in the rural areas to employ the increasing supply of surplus labour. Rural industrialisation, which plays a vital role in shaping China's economic growth and economic structure, is regarded as one of the major successes of the country's reforming economy. The share of rural enterprises in GDP rose significantly, from 2–4% in the 1970s to 28% in 1997, and rural enterprises dominated the export sector by the mid-1990s (Han 1996). They now employ nearly 30% of rural labour, and comprise a major source of new rural employment.

With the rapid growth of rural enterprises in China, the diversification of the country's rural economy has been remarkable. The contribution of the non-farm sector to gross value of rural output rose sharply from 31% in 1978 to 55% in 1990 and to over 75% in the mid-1990s (Huang and Rozelle 1999). Among the non-farm sectors, industry accounted for more than half of rural output value in 1995-97. The shares of the transportation and commerce sectors in the rural economy rose by three to four times between 1978 and 1997, despite starting from a very low base. Agriculture no longer plays its former dominant role in the rural economy in terms of output value.

Although the development of rural enterprises in China can be traced back to the early 1950s, the sector took off only after reforms were introduced in the late 1970s. During the early years of the reform period (1978-83), the output value of commune and brigade enterprises (CBEs), in real terms, grew by 12.3% annually—nearly 4% higher than GDP growth. Total CBE employment grew by 2.5% annually, 1% higher than the growth of the nation's labour force. Since 1984, China has implemented a series of policies to encourage and support rural enterprise development. The CBEs were renamed township and village enterprises (TVEs) to include farmers' individual and co-operative enterprises, and other forms of rural private enterprises. TVEs expanded at an even higher rate during the late reform period (1984-95). Their gross output value (in constant 1985

prices) increased by about 13 times, with an average annual growth rate of 24.1% from 1984 to 1995. Total employment in the TVE sector rose from 52 million in 1984, to 129 million in 1995, an increase of about 7 million per year. Increases in the rural labour force were almost entirely absorbed by the TVE sector. By 1995, the gross output value of rural TVEs accounted for 75% of the rural total, and 50% of national industrial output. Farmers' per capita income from TVEs represented 30% of their total income. TVEs employed 29% of rural labour and contributed 25% to GDP as well as 34% to financial revenue.

China's experience demonstrates the importance of institutional reform, price and market reform, rural industrialisation, and other policies that diversify the agricultural sector and rural economy as ways to promote farmers' income growth. After 1978, the country shifted from a controlled economy to a more open, market-oriented socialist economy, with generally positive results. Agriculture and the rural economy grew sharply as reforms liberalised the production and consumption institutions and markets. The shift from collective to household responsibility systems also enhanced the price-responsiveness of farm households. As the right to private trading was extended to include surplus output of all categories of agricultural products after contractual obligations to the state were fulfilled, diversification of agriculture as well as the rural economy accelerated.

Other developing countries—particularly those with abundant labour in the rural areas and in relatively capital-intensive industry in the urban areas—can learn from the Chinese experience of developing rural enterprise to maintain sustainable growth of the rural economy and of farmers' incomes. Rural enterprises can provide a major source of employment for workers who are transferred out of farming by the increase of agricultural productivity. The rural non-farm sector also prevents the urban congestion that inevitably accompanies industrialisation. Government policies can play an important role in creating these new employment opportunities for surplus rural labour—they can promote the privatisation of rural enterprises, credit market development, infrastructural investment, and the adoption of a balanced development strategy between the rural and urban economies, and education and training.

Microfinance to alleviate poverty

Although banking services in rural areas have expanded rapidly in recent years, most rural poor have not been able to benefit from these services. Studies have shown that community-based organisations have considerable potential to serve the poor better (Sinha 1998). Following the success of the Grameen Bank in Bangladesh and other similar experiments, micro-

finance institutions tend to rely more on peer group monitoring and joint liability to overcome the screening, monitoring, and enforcement problems commonly encountered by formal lending institutions (Gaiha et al. 2001).[5] These programmes deliver small loans to poor borrowers, mostly women organised into small groups, combined with accessible deposit facilities and much greater attention to risk management. Thus they aim to increase their incomes and have enough for consumer items needed. Many multilateral and other donors, as well as governments, now make wide use of micro-finance programmes and projects as anti-poverty instruments in developing countries.

Micro-finance can reduce the vulnerability of the rural poor to shocks caused by natural or man-made calamities, sickness, or death in the family, by building up a household's assets (IFPRI 2001). This is an important form of self-insurance against crises. An IFAD assessment of the impact of the recent financial crisis on the rural poor in Indonesia has shown that voluntary savings by the self-help groups promoted by its micro-finance programmes allowed them to maintain consumption levels. It also helped them carry on economic activities in the face of the credit squeeze in the formal sector. Micro-finance programmes have also had a positive impact on the incomes of the poor in Asia, particularly women. But growing evidence indicates that these programmes may not have reached the poorest of the poor. In Bangladesh, only 26% of hard-core poor households and 45% of absolute-poor households belonged to a credit NGO. Lack of access to land and a homestead was identified by a recent IFAD-sponsored study as the major factor in the exclusion of the hard-core poor (Rahman 1999). Illness-related crisis and dropout was another major constraint, and the Indian NGO SEWA (Self-Employed Women's Association) introduced a health insurance scheme as part of a micro-finance programme to overcome this constraint.

IFAD views micro-finance programmes as a 'vehicle' with continued potential to build local institutions and empower the rural poor, especially women. Facilitating women's access to independent income and financial services, providing cohesive structures of support through solidarity groups, and promoting self-employment all enhance women's status in the family and their control over family resources. Such schemes, in the final analysis, promote the family's wellbeing, thus proving to be an important strategy to reduce poverty.

[5] Micro-credit refers to small loans, whereas micro-finance is appropriate when such loans are supplemented by other financial services such as mobilisation of savings and provision of insurance.

Rural public works' programmes

Rural public works' programmes are another non-farm employment-generating instrument for reducing poverty. In addition to building rural infrastructure, they strengthen fall-back options for the rural poor, particularly the landless forced to rely on agricultural employment with long seasonal spells of inactivity. If some of the poor are excluded from a credit scheme and are vulnerable to risk, these programmes serve a complementary role by mitigating the effects of income fluctuation. This is the approach adopted in China through a partnership of the government, IFAD, and the World Food Programme. When the poorest are more interested in earning opportunities than in loans, rural public works' programmes could be superior to micro-credit schemes in reducing poverty.

Globalisation and the upland poor

With underdeveloped infrastructure, the upland and mountainous areas of Asia suffer from social deprivation mainly because of political neglect and remoteness. Until recently, the little development assistance upland populations have received has been guided by the primary concerns of the lowlands and mainstream societies. Indeed, the conventional industrial and agrarian sectors rarely flourish in the hills and mountains because of strong comparative disadvantages, for example, in terms of production costs. While the uplands have attractive assets, past efforts to exploit these comparative advantages have tended to dispossess the local populations. The current process of globalisation increases the risk of further marginalisation and disempowerment unless it is specially adapted for these areas.

The unique features of mountain areas—limited accessibility, fragility, marginality, and diversity—generally require diversification of resource use and production. But globalisation, guided by short-term profitability and external demand, promotes narrow specialisation in a few specific products. It encourages indiscriminate intensification of resource-use and over-extraction of niche opportunities, with little concern for their environmental and socioeconomic consequences (Jodha 2001). In many cases, this has led to over-extraction of timber, minerals, hydropower, and herbs, with the inevitable negative effects on the environment. Also, the process of globalisation is so rapid that the mountain communities do not have sufficient lead-time and capacity to adapt.

The upland and mountainous areas of Asia possess enormous potential for niche products and services such as high-value agricultural products (off-season vegetables, seeds, fruits), timber, (non-timber forest products) NTFPs, minerals, and ecotourism. They also provide hydrological services (watershed functions, hydropower), environmental services (carbon

sequestration), and protect biodiversity. However, globalisation is eroding the mountain areas' comparative advantages in several ways (Jodha 2001).

Years of continuous neglect and recent crises (financial, El Ninõ, La Ninã, and political insurgency) have created a sense of helplessness in the uplands. Realisation that the plight of the mountain and upland poor has been overlooked has come just in time. The first challenge is to help restore these people's confidence in their own abilities to emerge from the current situation. Self-empowerment must be supported so that poor upland people can make the decisions necessary for building a sustainable future based on their resources, improved technology, and centuries of accumulated wisdom.

The urgency for preventing or reversing the deterioration in the livelihoods of rural poor in upland areas is not based exclusively on humanitarian concern for these marginalised populations. Many upland and mountain communities in Asia can claim a share in the gains of globalisation through value-adding activities or by identifying and promoting new niche commodities and services. One example is the promotion of organic agricultural products that are in huge demand in developed countries. To facilitate the participation of mountain people new technology has to be introduced and capacity building, including training and certification, is necessary. Local communities could also gain by participating in ancillary activities to support bigger ventures, as in China (Rongsen 1998).

Mountain communities manage landscapes that provide environmental services to beneficiaries, but the communities do not share in the benefits of such services—clean and abundant water supplies from watersheds, biodiversity protection, and stocks of carbon that may alleviate global warming. Rewarding poor upland communities for providing these services would enhance their livelihoods and reduce poverty, and clear opportunities are now emerging in this respect. However, the current successes (Malaysia, Costa Rica, Colombia, Venezuela, Chile) in environmental transfer payments have generally benefited large landowners and concessionaires. There is a danger that some transfer payment mechanisms are being designed and implemented to the disadvantage of the upland poor; they may speed up the displacement of poor people from the uplands and increase their poverty. This may be true for carbon sequestration. There are also risks that the concerns of national and global societies regarding biodiversity protection and the hydrological services of watersheds may have a negative impact on the welfare and land rights of poor upland communities. The major potential benefits offered by transfer payments should be tailored, as a matter of urgency, to the specific needs of upland and mountain dwellers.

Building coalitions of the poor

Participation of the poor in local, self-governing institutions helps build a sense of collective identity and social capital, and this may lead to empowerment. However, such a process is usually slow. A coalition-building process often results in more rapid empowerment of the poor. If it is accepted that sustained economic betterment is essential to empowerment, complementarity between local self-governing organisations and self-help groups takes on added significance. As a result of economic betterment through self-managed activities, the poor or weaker strata of the population become better equipped to play a more active role in self-governing organisations. Furthermore, the fixed costs incurred in organising the poor (meetings, awareness campaigns, and dissemination of information) can be significantly reduced by promoting unions of self-help groups, thereby broadening membership and influence. Given the positive externalities among rural organisations, the government has an important promotional role to play.

As discussed earlier, the Oxbow Lakes' Small Scale Fishermen Project in Bangladesh and the Hills' Leasehold Forestry Project in Nepal funded by IFAD are examples of successful redistribution of community assets to coalitions of the poor. Bringing about change through these projects is not just a matter of enhancing individual capacity for action, it is also the result of facilitating collective action by the poor. It is sometimes necessary and productive to convince the well-off that they, too, would benefit from a transfer of resources to the poor. For example, the difficulties the well-off face in private fencing of common property resources (CPRs) (water bodies, forests), and thus in securing their investments, can be a powerful factor in persuading them to agree to a redistribution. There are projects in which both the poor and the rich have gained by agreeing on—and delivering—a strategy for redistribution. There are also cases in which the poor have benefited by uniting with some of the rich in a coalition aimed at raising incomes. Whatever options are available to the poor for enriching themselves by influencing institutions, the crucial issue is how these institutions—initially controlled by the rich, strong few—could be run in the interests of the majority, who are poor.

Concluding Remarks

The Asia-Pacific region has been the world's shining example of outstanding economic growth and poverty reduction in the last three decades. Nonetheless, not only does the region still contain two-thirds of the world's poor, there are indications that the rate of poverty reduction has slowed down in many countries since 1990. This region's performance in reducing poverty will determine success or failure in achieving the primary Millennium

Development goal of halving poverty by the year 2015. IFAD's field experience has shown that the region's poverty is concentrated in two dimensions: geographical and social. Geographically, it is concentrated in less favoured areas such as remote uplands and mountain areas, marginal coastal areas, and unreliably watered drylands. Socially, it is concentrated among women, indigenous peoples, the socially excluded groups such as 'dalits', pastoralists, the landless, and small and marginal farmers. In addressing poverty in the region, there is a need to address the structural causes of the lack of agency of the poor. The challenge is to tackle the causes of restricted access to productive resources and to increase control over the use of these resources. Changes in access to resources—such as property reform for forests in the uplands and access to finances, technology, and markets—will increase the incomes and overall capabilities of the poor.

Despite enormous problems, this region has a number of strengths that create a window of opportunity for achieving significant reduction in rural poverty. First, most countries in the region have democratic regimes, and democracy offers people greater freedom and control over their lives. Most governments have adopted pro-poor policies that provide a conducive environment for effective collaboration between donors and member governments. The region also has a vibrant civil society that is playing an increasingly crucial role both in advocacy and in service delivery to the rural poor, complementing the efforts of governments and donor agencies. There is a need to build on these strengths and work together to reduce rural poverty in the region.

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Chapter 3

Poverty in Mountain Areas of the Hindu Kush-Himalayan Region

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Introduction

Poverty is a multidimensional and complex concept. It encompasses aspects such as deprivation in wellbeing, lack of freedom and empowerment, exclusion, risk, and vulnerability (World Bank 2001; Henninger 1999; DFID 2000; Papola 2002b). It is a manifestation of lack of access to resources, information, technology, markets, social services such as education and health, employment opportunities, socioeconomic security, and decision-making processes. Because of their increasing population density and pressure on productive land resources, poor access to infrastructure and services, and fragile ecosystems, mountain areas generally show a higher incidence of poverty than the adjoining plains. The process of impoverishment has been accelerated due to increasing vulnerabilities, risks, and hazards associated with local as well as global processes like climate change and globalisation (Jodha 2001; ICIMOD 2001). However, the pace of impoverishment is not equal throughout the HKH region. Some areas have managed to reduce poverty through harnessing the comparative advantages of mountain ecosystems, while others have undergone further declines in living standards. It is pertinent to address questions regarding the present status of poverty in different areas of the HKH region, how poverty has changed over time, and what lessons have been learned so far.

This paper attempts to highlight the present status of poverty and its process in the HKH region. It is organised into five sections. The first section presents an overview of the HKH region, the second presents the status of poverty,

and the third highlights some issues of the poverty process. The fourth section reviews major policy and programme initiatives for poverty alleviation in the region, and the last highlights issues that need to be addressed in efforts to alleviate poverty and ensure improved livelihoods for mountain people.

The Hindu Kush-Himalayan region

Rugged topography

The Hindu Kush-Himalayan region extends from Afghanistan in the west to Myanmar in the east (Figure 1). It consists of four distinct mountain systems. These include the Hindu Kush Mountains in the west, the Karakoram in the north-west, the Himalayas in the east, and the Hengduan mountains, linked with other important mountain ranges such as the Kunlun range, in the north-east. There are other smaller ranges such as the Salt, the Suleiman, the Bugh, the Kirthar, and the Mekran in the west; and the Assam, the Manipur, the Chittagong Hill Tracts, the Arakan Yomas, the Regu Yoma, and the Tenassram Yoma in the east.

The topography is extremely rugged. The highest peak in the Hindu Kush is Tirich Mir (7690m). The eastern Hindu Kush is a cold desert highland without vegetation. The Karakoram range forms the divide between drainage into the Indian Ocean and into the deserts of Central Asia. There are more than 33 peaks exceeding 7325m, and K-2/Godwin-Austin (8611m) is the second-highest peak in the world. These mountains are heavily glaciated. Much of the area is wild and rugged. The area is linked by the 753 km Karakoram Highway.

The Himalayas are the highest mountain chain of all and they extend from the Indus River in the west to the Brahamaputra River in the east. There are 31 peaks exceeding 7600m. The extreme elevation and rugged topography are the result of rapid mountain-building forces and very high erosion processes. The Himalayas are a series of east-west mountain ranges. These include the Siwalik in the south, the Lesser Himalaya in the middle, and the Great Himalaya in the north. The Himalayas are also classified into three sections from west to the east. These include the Western Himalayas (Jammu and Kashmir, Himachal Pradesh, and Uttarakhand), the Central Himalayas (Nepal), and the Eastern Himalayas (Sikkim, Bhutan, and Assam). The climate of the Western Himalayas is influenced by westerly cyclones and is markedly dry, whereas the Central and Eastern Himalayas are influenced by the monsoon. Of the world's 14 peaks exceeding 8000m, eight are in the Central or Nepal Himalayas (Gurung 1999).

Figure 1: The Hindu Kush-Himalayan Region

The great Arakan range extends along the Indo-Myanmar border. The ridges rarely exceed 2000m. The Quinghai-Xixang (Tibet) Plateau, the Hengduan mountain range, and other mountain ranges such as the Kunlun lie in China.

Six of the major rivers of Asia–the Indus, the Ganges, the Brahmaputra, the Mekong, the Yangtze, and the Yellow–originate from the Hindu Kush-Himalayas. These rivers are part of a vast life-supporting system, but occasionally they also cause substantial loss of life and property by flooding. The HKH region has a very large number of glaciers and glacial lakes. These glaciers are retreating rapidly due to global warming, increasing the risk of both glacial lake outburst floods and regional shortages of fresh water.

Diverse settlement patterns – isolation and remoteness

Although data regarding detailed settlement patterns are scarce, the gross population density varies considerably across the eight member countries (Annex I). The sparsely inhabited Tibetan Plateau can be contrasted to the higher densities of population in the middle mountains of the southern Himalayas, although there are considerable variations among the southern, eastern, and western Himalayas themselves. The general pattern of settlement may be described simply as dispersed and remote, which makes it very hard to provide physical and socioeconomic access to markets and service delivery systems. Dispersed and remote settlements also mean that many settlements are isolated from mainstream development processes and are therefore exposed to greater physical, social, and economic vulnerabilities.

Development issues and prospects

Traditional subsistence systems and unsustainability

Most of the economic activities are based on natural resources. Population growth is consistently high in the mountain areas of the HKH region. Several different farming systems have been observed among these mountains. Specialised pastoralism is common in high mountain areas and the trans-Himalayan region that includes Tibet; mixed agropastoralism dominates in the high hills; and cereal-based hill farming in the middle hills and valleys below 2500m. Shifting cultivation is common in the eastern parts of the HKH region (Chand 2000). Most of the economic activities are subsistence oriented. There is not enough to meet increasing demand for cash income for basic services such as education and health, although changes have been observed in many areas. Some changes in the patterns of use of natural resources and the environment have been noticed. In

some cases crop productivity has increased. An analysis of time-series data of mountain regions in Bhutan, China, India, Nepal, and Pakistan shows an increasing trend in crop diversification towards horticultural and cash crops. Most of these diversified activities are taken up on marginal lands. The livestock population in general has been declining in the region. However, the number of stall-fed buffaloes and goats is rising with the increased use of external inputs and purchased feed as well as marketing of their products. In the Himalayan subtropics there is room for greater development of dairies with improved buffaloes (Tulachan 2001). Development of urban areas (market towns), tourism, hydropower, transportation network, growing extent of external linkages, and growth in institutions are other changes taking place in the HKH region.

Degradation of natural resources

Degradation of mountain natural resources—land, forest, pastures, and water—is one of the negative changes in the region. As a consequence, productivity has declined. In turn increasing labour shortages due to out-migration of a large proportion of the economically active male population, landlessness, food deficit, indebtedness, and an increasing burden on women are some of the other changes observed (Banskota 2000). Fallow cycles of shifting cultivation systems have been drastically reduced, resulting in serious declines in soil fertility (Shelley 2000). Similarly, the environmental risks of construction activities that are not properly planned to suit mountain areas are increasing. Some areas have been facing serious problems of unrest and insurgency, largely due to the growing disparity of incomes.

Potentials and opportunities

The experiences from this region show that the development potentials of agriculture, horticulture, livestock, hydroelectricity, and tourism activities are very high and related to improvement in basic infrastructure and communication, urbanisation, entrepreneurship development, and building human resource capacities. These mountain areas are characterised by great agroecological diversity, resulting in substantial comparative advantages in various products and services like horticulture, herbs and spices, medicinal plants, forestry and livestock systems, and tourism.

Poverty situation

Poverty in the mountains: concepts and controversies in measurement

Poverty is a complex and highly debated issue (Reardon and Vosti 1995; Rhoades 1997; Banskota 2000; Papola 2002b). Mountain people may be poor in terms of capital, but they are rich in other aspects such as

natural resources and cultural knowledge about resources and their management. They also possess specialised knowledge and technologies as well as social institutions and strategies for dealing with mountain problems. Thus conventional indicators are misleading, particularly those based on economists' 'welfare concepts'. It has been well argued elsewhere that 'welfare concepts' and the poverty indicators based on them do not account for the range and complexity of mountain communities' assets indicated above (Pitt 1986; Ives and Messerli 1984 and 1989; Rhoades 1997; Papola 2002b).

Different approaches have been developed and used so far–for example minimum standard of wellbeing, food security, vulnerability of sustainable livelihoods (UNDP 1997; DFID 2000; WFP 2001; Papola 2002b). Economic indicators like income, consumption and production are often used to assess poverty, but it is debatable whether the commonly defined poverty line is appropriate for assessing poverty in mountain areas where high variations in requirements for minimum energy and caloric intake exist (Papola 2002b). Moreover, complete information on poverty disaggregated for mountain areas is not available. Within these limitations, we will attempt here to assess the level of poverty based on Gross Domestic Products at national level among the HKH countries and the percentage of population below the poverty line in some of the mountain areas.

Economic background

The economic achievement of many HKH countries is very poor, and the per capita GDP in these countries in 1998 ranged from US$ 197 in Nepal to a maximum of US$ 777 in China (Annex II). Nepal, Bhutan, Myanmar, and Bangladesh all have per capita GDPs of less than US$ 300. Afghanistan, Pakistan, and India have per capita GDPs between $422 and $523. Per capita GDP and GNP measured at PPP is comparatively low in countries that are landlocked and have high proportions of highly rugged mountain terrain, (Afghanistan, Bhutan, and Nepal) or are smaller in area (Nepal, Bhuan, Myanmar, and Bangladesh). Annual variation in growth rate is evident in most of the countries in the region (Annex III). Such variation in the growth rate could well indicate that the economic performance in these countries is highly influenced by internal and external shocks both natural and manmade.

Poverty statistics—an incomplete picture

The data currently available on the percentage of population below poverty line at the national level, for rural and mountain areas, are presented in Table 1. These data were generated with different objectives using different approaches, which limits their usefulness, but they still provide a basis

from which to discuss poverty processes in the mountain areas of the HKH region.

Data on the ratio of population below poverty line are not available for HKH member countries like Afghanistan, Bhutan, and Myanmar. Among the other countries, the ratio of poverty ranges from 42% in Nepal to 36% in Bangladesh, 36% in India, 31% in Pakistan, and 4.6% in China. The level of poverty in rural areas is higher than the national average. In general the level of poverty is higher in mountain areas than the national average, though some areas show less than the national average. Significant spatial variation is found in the mountain areas within different countries. The mountain areas of Nepal have a comparatively higher rate of poverty (56-62% in the mountains and 41-50% in the hills) than in the mountain areas of other member countries. The corresponding rate is 8-48% in India, 23-36% in Pakistan, and 7-19% in China. In India some mountain states, such as Himachal and Jammu & Kashmir in the west and Manipur and Mizoram in the east, have ratios lower than the national average. Similarly, Gilgit in Pakistan also has a lower ratio than the national average.

Rural poverty in China declined from about 24% in 1979 to 4.6% in 1998. In Bangladesh, it declined from 46% in 1991-92 to 40% in 1995-96. In India, it declined from 44 to 37% between 1992 and 1994. Nepal is in a very precarious position. Rural poverty increased from 37% in 1976-77 to 47% in 1996, though there was a slight decline to 44% in 1997.

The poverty ratio in the Quinghai-Tibet Plateau declined from 30% in 1979 to 19% in 1995 (Ruizhen 2000). Similarly, in the south-western mountain provinces, it declined reduced from 21% in the 1980s to 11% in the1990s. In rural Sichuan, it declined from 20 to 7% during this period (Papola 2002a). In Himachal Pradesh, India, it declined from 35% in the 1980s to 8% in 2000 (Papola 2002a). In Pakistan, the poverty ratio declined from 42 to 23% in Gilgit, 61 to 33% in Balochistan, and 43 to 36% in Chitral between 1991 and 1997. Such a reduction in poverty ratios in mountain areas is mainly due to diversification in economic activities.

The experience of Nepal is quite discouraging. The poverty ratio increased in the mountain areas from 44% in 1984-85 to 62% in 1995-96 (Table 1). It remained constant in the hills during this period. The 1997 data show a decline in both the mountain and hill regions, but it is still very high compared to the ratio of the mountain areas in other countries in the

Table 1: Percentage of population below the poverty line in the HKH region

Country/Source	Percentage of population		Mountain Areas
	National	Rural	
Afghanistan	NA	NA	NA
Bangladesh			
1991-92 (World Bank 2001)	42.7	46.0	
1995-96 (World Bank 2001)	35.6	39.8	
Bhutan	NA	NA	NA
China			
1979 (Ruizhen 2000)		24.4	
1980s (Papola 2002a)			Qinghai-Tibet Plateau (30.0%)
1990s (Papola 2002a)	6		South-western mountain provinces (20.5%), rural Sichuan (20%)
1995 (Ruizhen 2000)	14		South-western mountain provinces (10.5%), rural Sichuan (7%)
1996 (World Bank 2001)	6.0	7.9	Qinghai-Tibet Plateau (19.2%)
1998 (World Bank 2001)	4.6	4.6	
India			
1980s (Papola 2002a)			Himachal Pradesh (35%)
1992 (World Bank 2001)	40.9	43.5	
1994 (World Bank 2001)	35.0	36.7	
1993-94 (Joshi 2000)	36.0		Arunanchal (39.4%), Himachal (28.4%), Jammu & Kasmir (25.2%), Manipur (33.8%), Meghalaya and Nagaland (37.9%), Mizoram (25.7%), Tripura (39.0%), Sikkim (41.4)
1993 (Papola 2002b)			Arunanchal (40%), Meghalaya (38%), Nagaland (48%), Sikkim (41%), Himachal (39%)
2000 (Papola 2002a)	36		Himachal Pradesh (8%)
Myanmar	NA	NA	NA
Nepal			
1976-77 (NPC 1992)	36.2	37.2	
1984-85 (World Bank 1999)	41.4		Mountain (44.1%), Hill (50.0%)
1984-85(NRB 1985)	42.6	43.1	
1992(NPC 1992)	49.2		
1995-96 (World Bank 2001)	44.6		Mountain (62.4%, Hill (50.0%)
1996 (CBS 1996)	45.0	47.0	
1997 (NPC 1998)	42.0	44.0	Mountain (56.0%), Hill (41.4%)
Pakistan			
1991 (World Bank 2001)	34.0	36.9	
1991 (Zia 2000)			Gilgit (42.0%), Balochistan (61.0%), Chitral (43.0%)
1997 (Zia 2000)			Gilgit (23.0%), Balochistan (33.0%), Chitral (36.0%)

Source: NPC 1992, 1998; Upadhyaya 2000; World Bank 1999, 2001; Joshi 2000; Zia 2000; Ruizhen, 2000; Papola, 2002a, 2002b.

region. Though quite a few accessible mountain areas, linked with major market towns such as Ilam, have been experiencing diversification in economic activities and improvement in livelihoods in recent years, the majority of the people in the mountain areas are impoverished. Larger parts of the mountain areas in Nepal have been experiencing high rates of population growth, rapid degradation of natural resources, poor infrastructure and service facilities, and increasing risk of natural as well as human-induced hazards. Efforts at poverty alleviation have had little success. Mitigation and management of risks of natural hazards, development of mountain infrastructure, and promotion of relevant technologies and market facilities are often neglected, while attempting poverty alleviation in the country. Being landlocked, small in size with a large proportion of inaccessible rugged terrain, Nepal has less opportunity to benefit from the complementarities that exist between highland and lowland areas. The highland areas in countries with larger lowland areas and more fiscal space have benefited from increased demand for goods and services in lowland areas and have performed better in economic growth and poverty alleviation (Parvez and Rasmussen 2002).

Poverty mapping—the need of the hour

The poverty situation, although well understood as serious in mountain areas, has not been assessed in a scientific and systematic manner. A continuous monitoring of poverty and related dynamics will help us understand the poverty phenomena of the HKH region. Thus 'poverty mapping' becomes an essential part of the learning process that can lead to better strategies for poverty alleviation in the HKH region.

Given the lack of continuous time series/spatial data, descriptions of the poverty process in the HKH can only be impressionistic and general at present. However, even so, it is important to go through the exercise so that we may also be able to evolve a strategy for mapping poverty and its dynamics in the HKH region and ultimately to evolve mountain development strategies for the region. It is well understood that data gaps can be compensated for through the application of modern remote sensing and GIS methods (Rhoades 1997; Papola 2002b).

Poverty processes

In describing poverty processes in the HKH region, it is useful to revisit the mountain specificities described by Jodha (1992). As described in 'The Poverty of Development Economics', the theories of development have not evolved to a point where one can claim to fully understand the poverty process and hope to counter it effectively (Lal 2000). Given the lack of a

good and acceptable general theory of poverty and development, one may be forced to be simplistic. In this context, the 'mountain perspective' evolved at ICIMOD looks at the mountain specificities—inaccessibility, fragility, marginality, diversity, and niche—and their imperatives influencing the poverty process in mountain areas (Jodha 1994). These are described below.

High energy, dynamics, and fragility

Mountain areas in the HKH region are very dynamic and fragile. Vulnerability caused by the fragile environment is accentuated by fragmentation of available resources. Because of the land's high energy dynamics (gravitational potential is high due to elevation and rugged topography), mountain areas are susceptible to natural hazards such as erosion, landslides, debris flow, and glacial lake outburst floods that cause loss of life, physical assets, and production base (Khanal 1996; Mool et al. 2001a, 2001b; ICIMOD 2001). Since the poor are exposed to the marginal areas prone to such hazards and they are less capable of coping with, resisting, and recovering from the impact of such hazards, their livelihoods are further impoverished (ICIMOD 2002). The capability for production and regeneration of mountain slopes is much lower than that of lowland areas due to their poor soils and low temperature. So intensification of land use leads to the degradation of the natural resource base, affecting productivity. The use of modern technology to enhance productivity is limited. It also requires more energy and resources to rehabilitate such degraded land. The usable resources are highly fragmented both in space and at household level. As a result, mountain areas have limited advantages for economies of scale, and these are very important for any market economy. Because of the rugged topography and low temperature, mountain people require more energy and resources for their survival and livelihood such as food, clothing, and shelter. Long hours of work, drudgery, and physical strain are some of the other dimensions of poverty in mountain areas (Papola 2002b).

Declining access to natural resources

Though the gross population densities in the mountain areas of the HKH region are low, population density per unit of productive cultivated land is very high. Many areas in this region have been experiencing a steady rise in population growth rates since the 1950s (Sharma and Partap 1994). Most mountain households depend on farming. Their farm size is either very small or marginal with low production potential. The per capita availability of cultivated land has been declining. In the absence of easy access to markets, extension of agricultural land into marginal areas is the only option for increasing food security. Such intensification has led to

the degradation of the forest and pastoral resources and further accentuated food insecurity. Labour is not used productively, and there are high incidences of unemployment, underemployment, and disguised unemployment. There is also growing evidence of deforestation in some areas–erosion processes have accelerated and the recharge of aquifers is diminishing–with the result that soil productivity has declined and the water stress is enhanced during dry seasons. Increasing scarcity of water for household use in the hills has also led to increased out-migration of farm households from mountain slopes with low population density to valleys with high population density. As a result, resources available in the mountain slopes are left idle (Khanal 2001). At the same time, the productive land in the valleys has been increasingly used for purposes other than agriculture. Such changes in land use have accentuated the problem of food insecurity in mountain areas. Out-migration has remained one of the most important strategies of mountain people for coping with the problems caused by the lack of productive employment opportunities in their home areas. Though remittances from these migrants have helped to increase the level of income, many areas are facing shortages of agricultural labour, which has led to less intensive use and abandonment of agricultural land, particularly among the large and medium farm households, thus affecting food security at community level (Khanal 2002).

Poor infrastructure and service facilities

Development of infrastructure, such as roads, schools, health posts, etc., is very costly in mountain areas. So the density of such infrastructure is less in mountain areas than in lowland areas. Moreover, the quality of service delivery in remote areas is very poor. The roads are frequently damaged and blocked due to landslides, debris flows in almost all the mountain areas, and heavy snow at higher altitudes. It is difficult to carry out rescue and rehabilitation activities during and after disasters in remote areas. All these processes have been leading to the insecurity and vulnerability of mountain people and their livelihoods.

Poor access to information, technology, inputs, and markets

Since large parts of mountain areas are not easily accessible, the flow of information about technology, inputs, and markets is limited. Moreover, the capital base of mountain people is poor and access to credit is also limited. Transportation of goods and services is very costly in mountain areas. As a result, mountain people benefit less from modern technology, inputs, and markets. Mountain people have to pay high prices for imported goods and sell their produce at cheaper prices. Many income-generating activities so far developed in mountain areas are extractive in nature and

local retention is much smaller (Papola 2002b). Such inequality of exchange of goods and services between highland–lowland areas has further accentuated the process of poverty in mountain areas.

Social and political exclusion

The participation of people living in remote mountain areas in the mainstream of development is poor. Often most people are socially excluded because of their tribal origin. They find themselves marginalised and develop a sense of exclusion and deprivation. They are less organised and their voice is weak (Papola 2002b).

Feminisation of poverty

Poverty in mountain areas also has a gender dimension. The brunt of poverty falls more sharply upon women and children, especially girls (Kievelitz et al. 1998; Papola 2002b). If consumption is taken as the indicator of poverty, women receive substantially less of the intra-household distribution of consumable items. If land holding is taken as an indicator of poverty, women are the poorest of the poor. Women who have land entitlements are generally widows, and they are also the de jure heads of the household. The incidence of poverty is higher in female-headed-households than in male-headed households. The trend of feminisation of agriculture is also increasing. A vast majority of these women toil as unpaid labourers on very small pieces of land with below subsistence productivity. Similarly, a great proportion of rural women suffer from chronic energy deficiency (RAP 1999). There are large gender gaps in education, health, and access to and control over income.

Weak institutions

Traditional institutions developed in the context of subsistence economies and isolated societies and are inadequate in the new context of globalisation (Jodha 2001). On the other hand, the new institutions created by government and non-government organisations have been only partially successful. Most of these institutions have not been built upon local traditional, institutional, and cultural bases.

High spatial diversity

The biophysical condition of mountain areas is very diverse, and the production potential differs significantly from one area to another. The potentials of remote areas are not assessed properly, and these areas are often neglected by efforts to achieve mainstream development. As a result, the areas are further marginalised and the quality of life of many people living in these areas is deteriorating.

Major policy and programme initiatives

Policies and programmes with different strategies and approaches have been initiated to address the increasing poverty in the region. A brief description of the approaches and interventions tried by the governments of different countries is given below.

Access to natural and physical assets

Many countries in the region introduced land reform programmes in the 1950s to address the problem of skewed distribution of cultivable land. China introduced a land reform programme in 1949 (Tao 1992). India introduced one immediately after its independence (Sharan 1992). Similarly, Nepal introduced such a programme in the 1960s. The programme in China helped to improve the condition of landless and marginalised farmers but did not sustain itself for long (Ruizhen 2000). The achievement in distributing land to landless and marginal farmers remained negligible in Nepal also. Resettlement is another programme initiative adopted to reduce poverty. The upland settlement programme in Bangladesh, resettlement programmes in Bhutan and Nepal, and poverty-reduction-through-voluntary-resettlement schemes in China are some examples (Shelley 2000; Lhamu et al. 2000). The resettlement programmes in China that were well integrated with infrastructural development, such as irrigation and transportation, to enhance local production have been very effective in reducing poverty (cited in Banskota 2002).

Improvement of infrastructure

Development policies in the HKH countries have emphasised inaccessibility as a major cause of underdevelopment and poverty in mountain areas and initiated programmes accordingly. The development of physical infrastructure, e.g., road networks, provides opportunities to diversify economic activities and has been instrumental in reducing poverty in some areas like Darjeeling and Himachal Pradesh in India and Ilam in Nepal (Sharma 1997; Papola 2002b). However, experiences from other parts of the HKH region show that merely improving transportation services is not sufficient for development; complementary development activities based on the comparative advantages of mountain areas are also required. Expansion of road networks must be planned to minimise the environmental hazards induced by road construction on mountain slopes. It may not be possible in the foreseeable future to provide roads to all mountain communities and, therefore, more recently, alternative experiments and approaches to provide physical access (e.g., ropeways and bridges) have been considered for very remote areas (e.g., gravity ropeways in Himachal, see Papola 2002b).

Improving productivity and food security

Realising the problem of inaccessibility and the resulting high cost of transportation, policy emphasis in the past was given to increasing production of cereals (Sharma and Partap 1994). People have been encouraged to increase production through intensification of agricultural activities over larger areas. Emphasis has been given to input-intensive agricultural technologies developed in the plains. However, these technologies often do not enhance productivity in mountain areas, and people have extended cropping to more marginal land to meet the increasing demand for food. This process has created a serious problem of land degradation and other environmental hazards and risks. However, the emphasis in recent years has been towards diversification of land uses based on the production potential of mountain areas. Reorganisation of production based on comparative advantages of different areas in China has been instrumental in reducing poverty through diversification of economic activities (Liu et al. 1994). Similarly, the horticultural development strategy of Himachal Pradesh in India has been effective in reducing poverty (see Chapter 15 by Partap and Sharma in this volume).

Access to credit and employment

Almost every country in the HKH has targeted credit and employment programmes. Many of these programmes tend to promote off-land activities. The Small Farmers' Development Programme (SFDP), Intensive Banking Programme (IBP), Production Credit for Rural Women (PCRW), Micro-credit Project for Women (MCPW), and Rural Self-Reliance Fund (RSRF) are some of the credit programmes in Nepal (Upadhyaya 2000). In Pakistan credit at low interest rates is provided through programmes such as the Small Industries' Development Board and Pakistan Industrial Credit and Investment Co-operation. Similar low interest credit programmes exist in other countries. There are some targeted employment generation programmes. National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) under the Integrated Rural Development Programme in India are examples of such programmes (Sharan 1992). There are also direct employment creation programmes like Food for Work in countries like Pakistan, India, and Nepal. However, many of these programmes have had limited coverage and are inadequate to address the mass poverty in many areas of the HKH region.

Human development

Policy programmes in all HKH countries have emphasised development of human resources. Other than regular vocational training, several programme-related training courses are provided. However, many of these

training programmes are general, and the local needs and opportunities of mountain areas are often neglected.

Social mobilisation

The importance of mobilisation of intended participants and beneficiaries of poverty alleviation programmes has recently been understood. The South Asian Poverty Alleviation Programme (SAPAP, UNDP) has been implementing social mobilisation programmes towards poverty alleviation in Bangladesh, India, Nepal, and Pakistan since 1994 (SAARC Secretariat 2002; UNDP 2000). The SAPAP has focused on grass roots' social mobilisation of the poor through social mobilisers or animators. Under this programme, efforts were made to promote broad-based, labour-absorbing growth; participation of the poor in economic activities through grass roots' empowerment measures; and a mechanism for dealing with vulnerabilities due to shifts in market conditions or natural calamities. It has had three programme components—grass roots' social mobilisation for building up institutions of the poor, supportive policy frameworks, and strong macro- and micro-level monitoring systems. The experience of this programme shows that community organisations are able to plan and manage the project and sustain the achievement. The micro-credit operation has had tremendous impact on income poverty. In areas where a holistic approach was followed, the programme has been fairly successful in involving people of all castes, religions, and classes into group activities. The inclusion of all sections in the programme's activities leads to a reduction in social conflicts. Many NGOs have been implementing poverty reduction programmes through social mobilisation in this region. Self-Reliant Development of the Poor by Poor (Integrated Development Systems; IDS) and Community Development through Social Mobilisation of Support Activities for Poor Producers; SAPPROS) in Nepal, and the Integrated Rural Development Programme (Agha Khan Rural Support Programme — AKRSP) in Pakistan are some of the programmes that have reduced poverty in different areas. However, the coverage of such programmes is limited (Upadhyaya 1998; Upadhyaya 2000; Zia 2000).

Other approaches

China has adopted an area-based approach through analysing the comparative advantage of an area, emphasising infrastructural development, strong technical support, and financial aid to manage and mitigate the mountain risks. The sustainable livelihood approach at community level, involving NGOs in natural resource management, has been adopted in Pakistan. Nepal has adopted a mixed approach. Self-reliance, social mobilisation, and strong support services, including R&D,

are important factors responsible for wide diversification of economic activities and reduction in poverty in Himachal Pradesh.

Concluding remarks

There are many opportunities and constraints for poverty alleviation in the HKH region. Mountains in this region are very dynamic and hence they are more sensitive even to small-scale change. More energy and resources are required to rehabilitate the region's resources once they are degraded. Furthermore, more energy and resources are required for mountain people to sustain their livelihoods than for people in lowland areas. Yet these mountain areas have comparative advantages. Any effort to alleviate poverty through exploiting mountain resources should have a strong component of natural resource management, including activities for rehabilitation and regeneration. A significant proportion of land in these areas is still cultivable waste, fallow and abandoned. There is appreciable complementarity among different ecozones and regions. Efforts should be made to optimise the benefit of it. Effective watershed management and strong regional co-operation are necessary. Since the risks and vulnerabilities in these mountain areas are increasing, efforts should be made to devise and implement effective mitigation and management measures. More research is needed in these areas. The growth of cereal crops in most of these mountain areas is stagnant. Agriculture and economic activities should be diversified to reduce poverty. Improvement in access to markets, information, and technology is crucial for diversification of economic activities, as is development of entrepreneurship. Collective entrepreneurship is important in the context of highly fragmented resources and limited economies of scale in mountain areas. Human resource development and empowerment of the poor are important aspects of poverty reduction. Good governance and social mobilisation are essential activities in this regard. In addition to these, stability and security are two basic elements for economic growth and poverty reduction.

Any poverty reduction effort should recognise the specificities of mountain areas. This implies adequate understanding of the opportunities and constraints in mountain areas, and developing effective, integrated programmes. A holistic approach with active participation of local communities is necessary. There is a need for collective institutions to overcome the fragmentation of resources in mountain areas and to enhance the bargaining power of the mountain people in rapidly changing markets. Since mountain poverty has a strong spatial dimension, an area-based approach is also necessary. Mapping of poverty could provide a basis to develop area-based poverty reduction programmes. Spatial analytical tools such as GIS could be very useful for mapping and assessing resources

and poverty. It is also necessary to develop institutional mechanisms for rational and equitable sharing of the costs of conservation of mountain areas and the benefits of environmental services offered to lowland areas at both national and global levels.

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Annex I: Mountain area, population, and their respective shares in the HKH countries

Country	Total area (sq. km)	1997 Total pop estimates (million)	Mountain areas (inclusions)	Area (mountains)			Population (mountains)		
				Total (sq. km)	% HKH total	% country	Total (million)	% of HKH total	% of country total
Afghanistan	648,000	17.4	25 of the 30 Provinces	390,475	10.9	60.2	15.5	10.6	89.3
Bangladesh	144,000	117.7	Chittagong Hill Tracts	13,295	0.7	9.2	1.1	0.8	0.9
Bhutan	46,500	0.71	Entire Territory	46,500	1.3	100	0.7	0.48	100
China	9607,000	1208.8	All of Tibet and parts of Yunnan and Sichuan	1,700,266	47.7	17.7	25.5	17.3	2.1
India	3287,300	918.6	All of 8 and parts of 3 Northern States	461,139	12.9	14.0	41.7	28.0	4.5
Myanmar	676,300	45.6	All districts in the 4 States of Kachin, China, Shan and Rakkhain	317,629	8.9	46.9	10.1	6.9	22.1
Nepal	147181	21.66	Entire Territory	147,181	4.1	100	21.6	14.7	100
Pakistan	796100	126.6	NWFPA, FATA, Northern Areas, AJK and 12 districts of Balochistan	489,988	13.7	61.5	31.1	21.2	24.6
Total	15352381	2457.1		3,566,473			146.9		

Source: Banskota 2000

Annex II: Per Capita GDP (US $)

Year	Afghan-istan	Bangla-desh	Bhutan	China	India	Myanmar	Nepal	Pakistan
1990	1475	221	168	342	360	203	188	395
1991	1416	223	140	353	313	199	168	415
1992	1344	215	140	415	308	218	177	435
1993	1218	227	132	511	295	230	174	443
1994	1657	249	150	457	335	238	194	475
1995	1159	272	166	584	370	248	199	508
1996	483	278	175	674	379	261	201	498
1997	442	286	205	735	420	272	217	473
1998	523	299	199	777	422	282	197	458

Source: United Nations (2001), Statistical Yearbook 1998. New York: Department of Economic and Social Affairs, Statistics Division (Table 18)

Annex III: Annual Growth Rates in GDP

Year	Afghan-istan	Bangla-desh	Bhutan	China	India	Myanmar	Nepal	Pakistan
1990	-3.1	3.4	6.6	3.8	5.7	2.8	4.6	5.5
1991	0.8	4.2	3.5	9.2	0.4	-0.7	6.4	7.8
1992	1	4.5	4.5	14.2	5.4	9.7	4.1	1.9
1993	-3.1	4.2	6.1	13.5	5	6	3.8	3.9
1994	-3	4.4	6.4	12.6	8.1	7.5	8.2	5.1
1995	26.2	5.4	7.4	10.5	7.4	6.9	3.5	5
1996	6	5.9	6.1	9.6	7.4	6.4	5.3	1.2
1997	6	5.6	7.3	8.8	6	5.7	5	3.3
1998	6	5.2	5.8	7.8	6	5	2.3	3.9

Source: United Nations (2001)), Statistical Yearbook 1998. New York: Department of Economic and Social Affairs, Statistics Division (Table 18)

Chapter 4

Reducing Poverty and Developing Mountainous Areas in China

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Introduction

The poverty reduction and development initiative is a strategic action undertaken by the Chinese government as a part of the process of economic reforms and opening up to the outside world. The efforts are directed towards eradicating poverty, and eventually towards achieving comparable levels of prosperity in different parts of rural China. The agricultural and rural economy of China has, in general, attained rapid growth; farmers' living standards have significantly improved and the number of poor people has dropped dramatically since 1978 when reforms in rural China were introduced. However, due to historical, natural, economic, and social reasons, some regions have developed very slowly and poverty remains their key problem. In 1986, China launched a nation-wide large-scale poverty reduction programme in a planned and organised manner. As a result, by the end of 1992, the number of poor who were inadequately fed and clothed had dropped to 80 million from 250 million in 1978. The majority of these poor people were distributed in areas with extremely harsh natural conditions and living environments, which required greater efforts to resolve their poverty problems. For this reason, the Chinese Government decided to implement the 'National 8.7 Poverty Reduction Plan', mobilising human, physical, and financial resources, and to attack core poverty and completely resolve the feeding and clothing problems of the remaining rural poor within seven years—by the end of 2000 A.D. The National 8.7 Poverty Reduction Plan is the first poverty-reduction plan in Chinese history with clearly defined objectives, targets, interventions, and a time framework.

Key accomplishments of the national 8.7 poverty reduction plan

Within the 7 years, the Chinese Government had significantly expanded poverty reduction funds, promoted initiatives in all walks of life, extensively

sought the support of the international community, and made concerted efforts to attack core poverty. The effort has yielded remarkable results, and the picture of poor areas has changed fundamentally.

Production and living conditions

During the 8.7 Plan, 592 nationally designated poor counties collectively developed 60 million mu (6 mu = 1 acre) of farm land, built 320,000 km of roads, installed 360,000 km of transmission and distribution power lines, and provided access to water supplies to 54 million people and 48 million animals. The percentage of administrative villages accessing electricity, roads, post, and telephone facilities reached 96, 89, 69, and 68%, respectively. Some of these indicators are quite close to or have reached national averages.

The pace of economic development

In the designated counties, the value of agricultural output increased by 54%, representing an annual growth rate of 7.5%; the value of industrial output increased by 99%, a 12.2% annual growth rate; local financial revenue increased by nearly 100%, or 12.9% annually; grain output grew by 12.3%, or 1.9% annually; per capita net annual income of farmers increased from 684 to 1337 yuan, representing an annual growth of 12.8%. All these growth rates are higher than the national average. Though the lower level of baseline production may partly discount such high performance indicators, the gains of concerted development and poverty reduction efforts cannot be minimised.

Social indicators

Several social indicators show positive pictures, though full quantitative data are not readily available. The growth of population in poor areas has been slowly brought under control and slightly declined; the progress of compulsory education has been very satisfactory; the drop-out rate of children of school age decreased to 6.5%; township hospitals in poor regions have been constructed and renovated; the lack of doctors and medicines has been ameliorated; applied agricultural technologies have been disseminated and farmers have acquired greater scientific knowledge for farming; 95% of administrative villages have access to radio and TV programmes, and farmers' recreational life has improved.

At the end of the year 2000, the number of rural poor in China having inadequate food and clothing declined to 30 million, accounting for approximately 3% of the rural population. Except for a small number of poor cared for by the social security system, the destitute poor who live in

areas with extremely harsh natural conditions, and some disabled people, the feeding and clothing problems of the rural poor have been basically solved and the objectives of the National 8.7 Poverty Reduction Plan have been largely achieved.

Poverty reduction strategy in the early 21st century

China can take credit for reducing the basic shortfalls of food and clothing as well as providing some social services and production facilities for the bulk of the poor. However, the task is unfinished in terms of ensuring comfortable living and economic prosperity for all its population, particularly in the regions that have lagged behind in terms of economic development and transformation. This is a major national economic priority. In keeping with this, in May 2001, China convened the Third Central Conference on Poverty Reduction and Development, which announced official implementation of the ' China Rural Poverty Reduction and Development Programme 2001-2010' and made overall arrangements for poverty reduction and development efforts in the early 21st century. China's poverty reduction and development efforts now enter a new historical era, the major attributes of which are summarised below.

The key tasks of poverty reduction in the new era

The key tasks of poverty reduction are (i) to help the poor who remain inadequately fed and clothed and to resolve their feeding and clothing problems; (ii) to help the poor who have tentatively resolved these problems to further upgrade their production and living conditions, consolidate the achievements already made, and improve their quality of life and capabilities to sustain the improvements; (iii) to intensify infrastructural construction in poor rural areas, improve environmental conditions, and gradually get rid of social, economic, and cultural backwardness of the poor communities to create decent living conditions for the poor.

Priorities of poverty reduction in the new era

Pursuant to the current distribution and characteristics of the rural poor in China, the focus of national support will be on ethnic minority areas, old revolutionary bases, border areas, and some destitute areas in central and western China where poor populations are concentrated.

Key poverty reduction policies and interventions in the new era

The main policy focus of poverty reduction in the new era is (i) to support poor areas to develop agriculture and animal husbandry based on market needs and combined with economic restructuring in an effort to generate

more income for the poor; (ii) to upgrade production and living conditions of poor regions, intensify the construction of rural infrastructure, and improve the eco-environment; (iii) to develop science and technology, education, culture, and health to facilitate all-round social progress of poor regions; (iv) to increasingly expand poverty reduction funds and improve efficiency in their use; (v) to bring into full play the virtuous tradition of the Chinese nation and continue mobilising all sections of society to participate in reducing poverty, including partnerships between government administrations and poor regions to support development initiatives. The assistance of eastern, developed provinces to western poor provinces is also necessary.

Poor mountainous areas and China's poverty alleviation work

Mountainous areas have been the focus of China's poverty alleviation work. The majority of China's poor population is concentrated in mountainous areas. In the 1980s, the poor population was mainly distributed in the following 18 areas: Yimeng mountainous areas; southwest Fujian province and northeast Fujian province; Nuluerhu mountainous areas; Taihang mountainous areas; Luliang mountainous areas; Qinling and Daba mountainous areas; Wuling mountainous areas; Dabie mountainous areas; Jingganshan and south Jiangxi mountainous areas; arid areas of Dingxi Gansu; Xihaigu; North Shanxi areas; Tibet; southeast Yunnan province; Hengduan areas; Jiuwandashan areas; Wumeng areas; and northwest Guangxi areas.

Among the 331 key poverty alleviation counties designated by the government in 1986, 304 (92%) are located in mountainous areas; the other 27 are comprised of pasturelands and the plains. During implementation of the National 8.7 Poverty Alleviation Project, it was found that 496 out of 592 poor counties were in mountainous areas, 84% of the total. In 2001, poor counties were readjusted in the light of the Poverty Alleviation Programme (1991-2010), but mountainous poor counties still accounted for 85% (505 counties). Most of the funds allocated by the government for poverty alleviation are also put into mountainous areas. Moreover, the government's poverty alleviation policies and objectives are all based on the characteristics of poverty in mountainous areas. Over the years, the State Council Leading Group Office of Poverty Alleviation and Development has attached great importance to development and research in mountain areas.

A symposium organised by the State Council Leading Group Office of Poverty Alleviation and Development in Huaihua City, Hunan province, in

1991 was attended by the directors of provincial, regional, and municipal poverty alleviation offices and relevant local scholars as well as the responsible officials of the State Council. The theme of the symposium was to analyse the current situation of China's poor mountainous areas, probe the approaches to developing the economy, discuss the experiences of successful case studies, and set up the State Mountainous Areas and Poor Areas' Development Research Commission.

Another symposium entitled 'An International Symposium on the Development of Poor Mountainous Areas' explored new approaches and methods for the development of mountainous areas. It was jointly hosted in Beijing by the State Council Leading Group Office of Poverty Alleviation and Development, the Chinese Academy of Sciences, and the International Centre for Integrated Mountain Development (ICIMOD). Seventy people attended. The key message was that China's poverty is mainly an issue of mountain areas. Reducing poverty is therefore an issue of developing mountainous areas, and this needs focused attention.

Basic features and emphasis of development of mountainous areas

To develop mountainous areas requires full knowledge about these places.

First, the environment of mountainous areas is a vulnerable ecological system. Mountainous areas are often the sources of big rivers and reservoirs of water. They play very important roles in preserving water and soil, preserving water sources, purifying water, keeping off wind and sand, and protecting biodiversity. In the past, because of lack of adequate knowledge about mountainous areas, people exploited these places blindly and have severely impacted the ecological balance. Thus, serious water and soil erosion and deteriorated ecological environments often haunt people living there. At present, they are not only inhabited by the poor but are also the most difficult areas for alleviating poverty.

Second, the resources of mountainous areas offer comparative or exclusive advantages. The natural resources of China's mountainous areas are diverse. Nearly 90% of China's woodland, 84% of China's forest reserves, 77% of China's pastures, 76% of its lakes, and 98% of its potential water energy are all located in mountainous areas. Mountainous areas have abundant natural, cultural, as well as tourism resources. They are the areas where China's most internationally competitive products grow. This will ensure appreciable gains to China and the mountains after China's entry to the WTO (World Trade Organisation). Mountainous areas are becoming areas that have great potential for progress based on biological

research, eco-tourism, and production based on NTFP (Non Timber Forest Products). Furthermore, 90% of China's minority nationality populations live in them.

On the negative side, mountainous areas are extremely dependent on external links and support, which is caused by the imbalance of their economic development vis a vis market location. Most of the modern investments and product markets demanded by mountainous areas are outside of mountainous areas. Poor access, isolation, distance, and the high cost of mobility adversely affect the mountain areas despite the rich potential indicated above. Finally, development of enterprises and social services in mountainous areas is further obstructed by the scattered distribution of population and villages.

Based on these features, the development of mountainous areas should attach more importance to the following aspects.

Poverty reduction efforts should focus on improving facilities such as infrastructure that can raise productivity; on enhancing people's knowledge, skills, and other capacities to harness the resource potential of their areas; on re-structuring industries and production structures to harness the opportunities created by economic reforms; and, finally, on promoting equitable external links between mountain areas and communities with non-mountain, developed areas. The strategies already planned for poverty eradication in mountain areas are fully sensitive to these needs.

Chapter 5

Poverty in Mountain Areas: Nature, Causes, and Alleviation Strategy

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Introduction

Conventional methods of portrayal, measurement, and diagnosis of poverty often lack a realistic assessment of the nature, extent, and causes of poverty in mountain areas. This is due to the geo-physical features and the social and economic formations conditioned by these areas. The characteristics of mountain areas that condition the lives and development of people are described as a 'mountain perspective' and consist of inaccessibility, fragility, and marginality as constraints on development; and diversity, niche, and adaptation mechanisms as windows for development opportunities (Jodha 1997 and 2000). These specificities, combined with the isolated nature of mountain economies and societies, lead to different manifestations of poverty than those obtaining in non-mountain areas. Lack of recognition and understanding of the implications of mountain specificities often lead to myths and misconceptions about the socioeconomic conditions of people and also misdirect the diagnosis of the sources of poverty. As a result, the strategies and interventions for development and poverty alleviation tend to be either unsuitable or only partially suitable, resulting in ineffectiveness.

Poverty concepts and mountain context

Poverty is a multidimensional concept. It encompasses both prevailing levels of welfare and capabilities (IFAD 2001). Most often it is measured and portrayed in terms of indicators of current welfare, disregarding the population's ability to sustain and enhance those levels. This approach to

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poverty has serious limitations in mountain areas. Levels of welfare are also mostly seen in terms of some economic indicator—income or consumption. Non-economic aspects of welfare and poverty are not necessarily ignored, but it is assumed that those poor in terms of income and consumption are poor in other aspects as well, or conversely that those able to meet some objectively determined minimum level of consumption are also able to enjoy other social and political aspects of a decent living.

There have been attempts both to sharpen this concept of poverty by going beyond a single income or expenditure indicator, or headcount ratio, to assess the poverty gap and poverty severity (World Bank 1999) and to include socio-political dimensions in multidimensional indicators such as a human development index (à la UNDP) for different countries and regions or by bringing aspects like vulnerability, deprivation, lack of freedom and empowerment, and exclusion (Henninger 1999) to the analysis of poverty. Vulnerability—defined as the lack of people's capacity to withstand shock (DFID 2000)—is also to be included as a basic feature of poverty. Other phenomena considered as socio-political dimensions of poverty are lack of autonomy (the capacity to decide and act for oneself) and lack of entitlement, which together make people incapable of claiming their customary and legal rights (Harris et al. 1992; Sen 1999). In its latest exposition on poverty, the World Bank views poverty as consisting of lack of four attributes: opportunity, empowerment, security, and capabilities (World Bank 2000).

These and other approaches to defining poverty and identifying the poor are relevant to mountain areas, but none of them directly incorporates the specific manifestation of poverty in these areas. Limited options, food insecurity, and vulnerability are some of the basic features of mountain livelihoods, but their forms and sources are often different from those in other areas. IFAD's operational approach comes closest to recognising physical location as a correlate and source of poverty. IFAD looks at poverty from different perspectives such as 'who are the poor', 'where do the poor live', 'how do the poor get income and use it', 'what access do the poor have to assets' and 'what are the barriers to progress for the poor' (IFAD 2001), which lists 'high altitude' and 'remote' areas among the ones with high concentrations of poverty.

Poverty is not only a multidimensional phenomenon, its manifestations vary across areas and populations as well as by levels of development. The poor are mostly identified in terms of private consumption below an objective 'poverty line', but those considered non-poor in terms of current

consumption and income may be poor in terms of capabilities and welfare. Such non-linearities between consumption levels and other aspects of welfare and capabilities are more prominent in mountain areas where variations in access to markets, services, and knowledge can lead to drastically different levels of welfare and capabilities not necessarily reflected in current consumption levels.

Do we need separate indicators of poverty and development in mountain areas, or should we study them in a comparative framework using common indicators and methodologies? The 'mountain perspective' framework argued that mountain areas need a separate frame of analysis due to the specificities that qualitatively distinguish them from flatlands. Furthermore, a plea has also been made to apply well-established development indicators such as 'quality of life indicators' in mountain research, even though the complex living conditions and great variations between regions, groups, and households are well recognised (Kreutzmann 2001). This view is further contested by others, not so much to argue for separate indicators for mountain areas, but on the basis that the indicator-driven research is highly aggregated, externally imposed, and de-contextualised. Emphasis, it is argued, should be not only on building relevant indicators, but should also be on the "qualitative, informal and based on cultural context" (Rhoades 2001). A more meaningful approach to research on development and poverty in mountain areas would, however, first examine how the common indicators suit the specific conditions in these areas and what modifications are needed to reflect the location specificities, and then identify what additional phenomena and processes might account for mountain specificities. Accordingly, an attempt is made here to examine the appropriateness of conventional economic measures of poverty in portraying mountain poverty, and then to indicate some of the non-economic correlates of poverty which are manifested in mountain areas.

Nature and manifestations of poverty

Poverty indicators based on income-consumption: methodological limitations

The most common measure of poverty is a 'poverty line' expressed in terms of the monetary value of a consumption level reflecting a minimum fulfilment of food, clothing, shelter, and other basic needs. Generally expenditure corresponding to a normatively fixed calorie intake is taken to constitute this 'line'. Mountain conditions, terrain, and climate make it absolutely necessary that people have a higher minimum energy and caloric intake in their food than in the plains and that they have warm clothing and permanent shelters to protect themselves from extremes of weather and climate. Using common consumption norms to measure wellbeing

may therefore place many mountain people above the poverty line even though their basic needs are not met. Such consumption-based poverty ratios are thus likely to indicate a lower incidence of poverty in mountain areas than even in relatively better-off regions in the plains. This is evident in comparing the incidence of poverty in several mountain areas of the Hindu Kush-Himalayan region with national averages (Annex 1).

Even using such a conventional measure, incidence of poverty in mountain areas is generally found to be higher than in the plains. But if needs for higher energy/calorie intake and clothing and shelter, as well as the higher prices obtaining in mountain areas, are taken into account, the incidence of poverty in terms of deficiency in meeting basic needs would turn out to be much higher still (see Annex 2).

A more important feature of the consumption levels in mountain areas is that they are not always met by local income but by remittances sent by migrants, thus making their sustainability rather precarious. Studies from different areas in India suggest that about 35% of the consumption needs of mountain households are met through remittances (Khanka 1988; Bora 1996). Income levels estimated with methodologies using conventional national accounts also tend to overestimate the economic status of mountain people, as they measure income originating and not income accruing. In the case of mountain areas, the latter is much smaller than the former due to the extractive nature of several major activities (e.g., forestry, tourism, hydroelectricity, minerals) from which income is produced in the region, but mostly flows elsewhere. Thus the income available for consumption and investment locally is significantly smaller than the income generated.

Access to infrastructure and services: limitations of standard indicators

Standard indicators of access to infrastructure and services that directly reflect levels of welfare are mostly inadequate or even misleading for mountain areas. Road length per thousand of population or even per square kilometre of area, or schools and health posts per thousand of population, do not correctly reflect access to these services, as even a high density of these items may leave many settlements and groups far from them. Indicators that reflect the proportion of population within walking distance can better convey the extent of access, but even such indicators have their limitations due to the terrain that needs to be covered. Similar distance to a motorable road, school, or health post implies less access in mountain areas than in the plains. A kilometre in the mountains is much 'longer' than in the plains in terms of the time and energy it takes to walk it!

Insecurity and vulnerability

Livelihoods in mountain areas are highly insecure and vulnerable because of the limited options offered by the available resource base, fragility of resources and environment, and lack of transport due to physical inaccessibility. Food insecurity, due to limited availability and low fertility of land and difficulty in accessing food from lowland areas, is common in many mountain areas. Infrastructure like roads, which constitute lifelines for most mountain people, are often not dependable because of natural hazards and blockages. Fragility and high incidence of natural hazards often threaten the very means of survival and livelihoods such as agricultural lands, crops, and shelters, besides transport and communication channels. In other words, maintenance of livelihoods, even at the levels obtaining at any given time, is highly precarious, and the danger of relapse into poverty is ever imminent.

Social and political exclusion

Mountain areas are often located on the periphery of a nation's geographical landscape. They are too sparsely inhabited to be politically important. Often most people in the mountains are also socially secluded due to their tribal origins. As a result, they find themselves marginalised with limited or no voice, presence, or involvement in the national socioeconomic and political processes. This not only results in the absence of their concerns and issues from the national agenda, but also develops in them a sense of exclusion and deprivation, which adds a psychological dimension to the poverty of mountain people (Sadeque 2000).

Geographically endemic poverty

Poverty in mountain areas primarily results from the severity of the constraints of unfavourable geographical situations and only secondarily from the resource endowments of individual households. Thus, poverty tends to afflict the entire population of an area more often than only some households in a generally non-poor area. This is not to deny the differences and inequality among households and groups, but they are less glaring than those between the accessible and inaccessible areas, on the one hand, and between the mountains and other areas, on the other. Poverty in the mountains is more area-specific than household-specific. This has been well recognised in China's poverty alleviation approach, in which 'poor areas' rather than 'poor people' are identified and targeted for development (Banskota and Sharma 1993).

Physical stress, hazards, and risks

Among the most visible manifestations of poverty in mountain areas are the strain and drudgery that people, particularly women, must undergo to

eke out a living. A large part of the strain results from difficult access to such basic needs as water and fuel and basic inputs like fodder for livestock, which are not always available nearby and must be fetched from some distance through difficult and hazardous terrain. Various operations in the main productive activity—agriculture—are no less strenuous, as most of them have to be carried out manually. Long hours of work, drudgery, hazards, and physical strain are not only results, but in fact are also special dimensions of poverty in mountain areas that are not reflected in any of the conventional indicators.

Mountain areas, as a result, have a much higher incidence of out-migration (estimated to be around 40% among adult males) than areas in the plains, producing many impacts on mountain economies and societies. To the extent that migrants send remittances, they help to sustain their households. Since migrants are mostly males, the sex ratio is 'favourable', particularly in the working age-group, and there is a higher incidence of women-headed households. Though migration is resorted to as a coping mechanism, it often leads to accentuation of poverty due to the shortage of productive labour force. The already high workload of women increases, with accompanying adverse effects on their health and security. The trauma of separation and divided families haunts a large number of mountain households. Thus, migration is a multidimensional aspect of poverty in mountain areas, constituting not only a result, but also a cause and manifestation of poverty itself.

Sources of poverty

The above description of the various facets of poverty in mountain areas suggests that the nature and pattern of livelihoods are primarily shaped by physical characteristics, which also condition the socioeconomic situation of the people in these areas. Inaccessibility, fragility, and marginality lead not only to a limited base for sustaining livelihoods but, more important, result in high degrees of vulnerability, risks, and uncertainty.

Limited resource base

It is often said that mountains are rich in resources. However, usable resources are extremely limited. Most mountain households depend on farming as their main source of livelihood, but as only a small fraction of the land area is arable, the per capita cultivable land is very small, even with very low population density. For example, in the Hindu Kush-Himalayan region, only 6% of the geographical area is cultivable (Banskota 2000). Over two-thirds of the households, with an average size of 5-6 persons, own less than one hectare of land each in Bhutan, the hill states of central and western India, the hills and mountains of Nepal, and the mountain

areas of Pakistan (Tulachan 2001). Per capita arable land is higher in some parts of north-east India and Bhutan, but most of it is used for low-productivity shifting cultivation. In other areas, too, most of the land is sloping and not suitable for modern agricultural technologies applied elsewhere. A good part of the arable land is marginal with very low fertility.

The resource base for non-farm activities is also limited and often not available for use due to its fragile and environmentally sensitive nature. Also, its potential is not realised due to a number of constraints. Being inaccessible and isolated, most mountain areas have little exposure to and contact with the outside commercial world. This has forced them to focus on farming for subsistence, as accessing food from outside has been difficult. A growing population with limited cultivable land has resulted in food inadequacy and insecurity. Opportunities to earn income from non-farm activities to buy food and other items have been constrained by limitations of resource base and infrastructure. Thus, over the years, the livelihoods of most mountain people have become more precarious.

Restricted access to natural resources

Resources in which mountains are rich, such as forests, minerals, and water, are not always available for use by mountain people. Besides the difficulties of physical access, they are mostly under the control of external authorities like governments, which restrict their use by local communities for various commercial and environmental reasons. When these resources are exploited either by governments or the private sector, most incomes and revenues flow out with minimal retention within the mountain regions.

Lack of access to markets, technologies, and inputs

The limited opportunities for income enhancement that exist with whatever access to natural resources is available to local people are constrained by lack of access to markets. Markets are physically distant, information about them is not available and, due to small and dispersed production, marketing costs are prohibitive. Production uses traditional techniques that are mostly manual due to the lack of other forms of energy, resulting in low productivity. The capital base of mountain people is low, and access to credit is limited due both to lack of credit outlets and the technical ineligibility of most mountain households to obtain commercial bank loans. For example, in India, with a strong state-led emphasis on extending banking outlets and services in rural areas and targeted programmes for agricultural credit, per hectare credit in mountain areas still was only INRs 150, against INRs 1,600 in the country as a whole (Chand 2000). In Nepal, of the seven major micro-credit programmes, five had no coverage in mountain districts and limited coverage in hill districts. Only the

government-run programmes reached all districts (Dhungana and Thapa 1999). Remittances that many households receive from out-migrants are mostly used to meet the deficit of subsistence-level consumption over their own production and income.

Unequal exchange

The purchasing and investing capacity of mountain people is further weakened by highly unfavourable terms of trade in their transactions with other areas. Most of their purchases are at high prices due to transportation costs and scarcity. They have to sell their produce at low prices due to lack of knowledge and accessibility to markets; poor holding capacity due to the dire necessity for cash to meet subsistence needs; and lack of bargaining power due to unorganised, individual-based, small-scale sales to middlemen. Lack of lateral trade and transport often leads to sale at low prices and purchase of the same commodities at high prices, as a result of only 'vertical' transport and trade channels between the mountains and plains being available; and not among different mountain areas—goods first flow 'down', and then 'up' for final sale to consumers in the mountains. Inequality in exchange is magnified if one considers not only traded goods but also the overall flow of natural and human resources from and to mountain areas.

Weak institutions

Mountain communities have evolved their own institutions and organisations to regulate the socioeconomic aspects of their lives and to cope with calamities and hazards. These include mechanisms for sharing labour and other household resources; management of common resources like forests, pastures, and water; and community action to meet natural disasters. They have functioned well in the context of subsistence economies and isolated societies. They are, however, increasingly inadequate in a scarcity-ridden and dynamically changing environment exposed to a wider world. Their efficacy in the spheres of development and poverty alleviation is now inadequate. For example, tribal councils in many areas have been successfully managing resources and community conflicts, but are not equipped to deal with the problems of organising production and marketing agricultural or forest-based products. On the other hand, the new institutions and organisations formed by governments and non-government agencies to carry out these tasks have had only partial success, because they are alien to the local communities (not having been built upon the local traditional, institutional and cultural base) and are not able to evoke the required enthusiasm and commitment of people around common interests and visible or potential benefits.

Neglect of mountain specificities in development policies

Mainstream development strategies, policies, and programmes are often unsuitable for mountain areas, because of either inadequate understanding of mountain specificities or lack of concern for marginal mountain areas. The dominant development strategies like those based on the green revolution and large-scale industrialisation have little relevance for mountain areas, and no special strategies based on their specific conditions have been evolved or implemented. Mountain areas are often written off as unfit for development, with any concern raised relating solely to environmental conservation. This view fails to recognise (and therefore tends to ignore) the opportunities that mountain areas have in the diversity, comparative advantage, and niche of the natural resource base and the skills and dexterity that mountain people have developed to adjust to adverse circumstances. Even when these opportunities are recognised, as in tourism, hydropower, and forest products, appropriate and integrated policy and institutional mechanisms are not developed to use them for the benefit of mountain people.

Poverty–natural resource degradation link: a brief digression

It is extremely important to understand and appreciate the nature and implications of the poverty–environmental resources–development links in mountain areas. Given the limitations of large-scale creation and use of man-made physical assets and technologies, mountain people primarily depend on natural resources for sustaining and improving their livelihoods. Most of these resources are environmentally sensitive, and their indiscriminate exploitation threatens the sustainability of lives of people in mountain as well as lowland areas.

Relationships between development and environment and between poverty and natural resources have been studied for over two decades within the framework of what has come to be known as 'sustainable development'. The concept, as it evolved in the Report of the World Commission on Environment and Development, is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). It implies prudent use of natural resources at a rate that does not exceed that of their regeneration. Studies and discussions on the subject have generated a large number of hypotheses ranging between postulating an inherent conflict between development and environment to the potential of poverty alleviation to protect the environment. Their further examination on the

basis of experiences from different mountain areas is necessary both to improve our understanding of poverty–resource degradation linkages and to devise strategies for sustainable development.

Poverty–environmental degradation: cause and effect

First we should examine whether poverty is a cause or consequence of degradation of natural resources. Most studies have established an association, but not causality between the two phenomena (Markandya 2000). In general, the poor are seen as 'the most visible agents' of destruction in degraded environments. The poor depend heavily on natural resources, especially in mountain regions, and their poverty offers them few choices. This lack of alternatives forces them to intensively use the available natural resources. At the same time, the poor seem to stand at the end of a long chain of cause and effect and "are the messengers of unsustainability rather than its agents" (UNFPA 2001). A growing view holds that the poor are not necessarily those mainly responsible for resource degradation: quite often the rich have made a much greater contribution to this process (Metz 1991; Prakash 1997; Jodha 1998a). Irrespective of who, the poor or the non-poor, is mainly responsible for environmental degradation, it is widely agreed that the poorest sections of society are hurt most by a declining natural environment, because the poor and the vulnerable are most often users of marginal resources and also the most dependent on common property resources (Dasgupta 1996).

Resource management systems: is community participation the solution?

The key to the poverty–environment relationship is the question of natural resource management systems. It has been argued that the traditional systems of natural resource management by communities have a great deal to offer in evolving institutional arrangements for sustainable management of natural resources and their use for the benefit of local people (Berks 1989; Jodha 1998a, 1998b). There are several cases documented of how community, rather than state or private, control and management, has succeeded in ensuring sustainable use and regeneration of natural resources. Notable examples are the land, water, and forest resources of western India (Chopra and Kadekodi 1988; Chopra and Gulati 1996; Narain 1998) and of participatory forest management arrangements, especially the community forestry in Nepal (Bhatia 2000; UNFPA 2001).

Economic growth, environment, and globalisation

An interesting aspect of the poverty–environment-development relationship is the long-term relationship between income levels and quality of

environment. As pointed out by Markandya (2001), some studies suggest a U-shaped relationship between GDP and environment—i.e., the quality of environment deteriorates initially as GDP per capita increases, and then improves after a threshold level of per capita GDP is achieved (Grossman and Krueger 1991; World Bank 1992; Barbier 1997). Other evidence has favoured an 'inverse U-shaped' relationship (Stern et al. 1996), suggesting a positive relationship between GDP and environment initially and a decline in quality of environment after a critical level of per capita GDP is achieved. The nature and sequence of this relationship need to be studied in the specific cases of mountain areas; the impact of globalisation on mountain communities and the environment must also be understood. It is feared that globalisation can, on the one hand, marginalise the nature-based niche of mountain areas and, on the other, be quite insensitive to their fragile ecosystems (Jodha 2000). Economic policy reforms to benefit from globalisation should therefore incorporate the social, environmental, and institutional reforms required to prevent increases in inequality, poverty, and environmental degradation (Reed and Rosa 1999).

Economy–environment trade-off: making choices of economic activities

Most development activities, either of a productive nature or for building infrastructure in mountain areas impinge on environment. Environmental impacts of different activities vary, as does the economic benefit flowing from them. At one end, there could be 'environmentally benign' activities with high income generating potential (e.g., growing medicinal plants and herbs, planting fruit trees, etc.), and at the other end there are 'ecologically disastrous' ones bringing large short-term gains, mostly to non-local entrepreneurs and contractors, but inflicting irreparable damage to environment (e.g., extractive activities such as mining and indiscriminate exploitation of forests). The latter need to be, no doubt, severely restricted; but confining economic activities to the former will leave mountain people with very limited options for their livelihoods. In between the two, there is a range of activities with varying degrees of environmental impacts and economic benefits. Each entails a trade-off, and a pattern of activities must be selected that minimises environmental impact and maximises economic benefits. Exact, quantitative measurement of each activity's impact is not always possible, especially the environmental impacts. It should, however, be possible to rank activities by their environmental impacts and economic benefits, as illustrated in Annex 3, and use such rankings to inform decision-making and policy.

Poverty alleviation in mountain areas

Towards a mountain-relevant integrated approach

Approaches, strategies, and interventions for poverty alleviation in mountain areas have mostly been replications and extensions of those developed for mainstream flatland areas. Most of the strategies have been sectoral, relying on a lead-sector approach. Identification of the sectors has often not been based on the area-specific approach required in mountain areas, and the requirement for intersectoral linkages in mountain areas has not been adequately recognised. Thus value-addition and marketing emerge only as afterthoughts in agricultural development and diversification programmes. Livelihoods and income generation are seen only as an appendix to the forestry sector programmes. Promotion of tourism has not always been linked to local economies, and enterprise development is seen as a function of small credit. In recent years the government and donors have tried to recognise linkages, though mostly on the basis of experiences in the plains, and to develop more comprehensive and integrated programmes. Greater investment in infrastructure and access improvement has become a major element of development strategies for mountain areas, for example, in China; sector specialisation based on comparative advantages is being tried in parts of the Indian Himalayas.

In most cases, however, the approaches and strategies of different programmes have not recognised the specificities of the forms and sources of poverty in mountain areas. Building infrastructure like roads is rightly seen as a necessary condition for improving the livelihoods of mountain people, but application of appropriate environmentally-friendly technologies and use of modes of transport and communication other than roads do not get adequate attention. Nor is it recognised that improving access without efforts to develop productive linkages may result in a drain of local resources from rather than gain for local people. On the other hand, programmes directly assisting poor households in small productive activities are undertaken without providing infrastructure and market linkages. The availability of new technologies has often prompted introduction of programmes to use them without an adequate understanding of local resources and the skill base and needs of mountain people. Training programmes have sometimes been implemented to develop skills that have no local use, whereas efforts to develop human resources appropriate for the local resource base have generally been lacking. In recent years an increasingly larger number of projects has focused on social mobilisation, but with little planning of the productive activity in which the strength of the community and group built on this basis could be fruitfully used. Concern for the mountain environment has resulted in many conservation projects, but quite often they have been at

the cost of the livelihoods of local people, as they have been introduced on the premise that the activities of the mountain people in pursuit of their livelihoods have been the main cause of environmental degradation (for more details, see Papola 2002).

Combination of approaches

The essential requirement of a relevant strategy to alleviate poverty in mountain areas is to combine the elements of various approaches, each of which may be relevant but which can become effective only in suitable conjunction with others. Each of the mainstream approaches aims at supplying one or a few missing links—physical access, organisation, credit, skills—in development and thus may suit relatively better-endowed areas. Mountain areas have several links missing due to their physical and socioeconomic characteristics. Therefore, the strategy of development and poverty alleviation for these areas needs to integrate elements of all these approaches, with suitably varying weights depending on the specificities of different areas. Some basic elements of such an integrated strategy for development and poverty alleviation in mountain areas are outlined below.

Recognition of mountain specificities: a basic prerequisite

Mountain specificities consist of a set of conditions of which one sub-set (inaccessibility, fragility, and marginality) represents constraints and another subset (diversity, niche, and adaptation mechanisms) opportunities for development and poverty alleviation. Opportunities offered by the latter are not realised because of the constraints imposed by the former. The crucial issue is to find appropriate ways of mitigating and reducing the constraining influence of the former in order to ensure sustainable use of the latter. The approach to development and poverty alleviation in mountain areas has to be two-pronged: reducing inaccessibility, minimising the impact of fragility, and bringing mountain economies and societies into the mainstream to reduce their marginality, on the one hand; and identification, development, and use of the diverse natural endowment, comparative advantages, and human adaptations and skills, on the other. The two processes have to be integrated and go on simultaneously.

Improving access: physical and social infrastructure and energy

Improvement in access of mountain people to markets, technologies, and information as well as to social services like education and health is vital for their development and ability to sustain their livelihoods. At the same time, improving access through building physical infrastructure like road

networks damages the environment and is also very expensive, particularly in relation to the prospective returns on investment. The strength of economic argument against roads in the mountains depends on the time span of assessment of returns; if planning of roads is integrated with identification and use of the economic potential of the catchment areas of the roads, data will be even more relevant. So far as the environmental argument is concerned, it seems to have been used too often without fully examining its force. Efforts nevertheless need to explore and use technologies and methods of constructing infrastructure that minimise environmental damage and hazards. There have been some experiments to deal suitably with the problems of costs, environment, and economic benefits of roads in mountain areas (Banskota 1997), which need to be carefully assessed from the perspective of their wider application. At the same time, it may not be possible, within the foreseeable future, to provide road access to all mountain settlements; therefore, alternative ways of providing physical access, such as ropeways, power driven or gravity-based, and bridges have to be seriously considered as suitable options for highly remote and inaccessible areas.

Building infrastructure to provide access to education, health services, and information on technologies and markets should generally have no adverse environmental impact. It is, however, expensive because, given the low population density, it is necessary to have more schools and health posts per thousand of population to ensure universal access. Given, however, that mountain people have as much right to these basic services as any other group of the population, society would have to bear their cost. New frontiers opened by satellite communication, information technology, and electronic media offer opportunities for distance education, as well as for accessing information on technologies and markets in a more economical and effective manner. Capturing and using these opportunities on a wide scale need to be seriously explored.

Access to modern forms of energy is extremely important for improving quality of life and the productivity of economic activities. Mountain areas suffer from a paradox in this respect: they are endowed with large amounts of energy resources—especially water, but also biomass, wind, and solar radiation—but most mountain settlements and households have no access to electricity. For example, in Nepal only about 5% of rural households have electricity; figures for rural Balochistan and north-east India are 23 and 25%, respectively (Rijal 1999). Use of water resources often gets bogged down with controversies on environmental impacts of large projects, amidst which the needs of mountain people become completely sidelined. Environmental problems apart, projects based on the

establishment of large dams, in any case, provide little benefit to upstream mountain communities. It must be ensured that they do not pose any threat to the lives and livelihoods of the mountain people, and mechanisms should be put in place to ensure that part of the revenue earned by these projects is invested in improving their lives. The solution to the energy problems of mountain areas, however, is unlikely to lie in connection to larger grid systems, but in the development of small-scale, decentralised systems based on local energy resources (Rijal 1998).

Resource base with comparative advantages: identification, assessment, and access

Development of mountain areas in ways that will alleviate poverty must be based on local resources. Therefore, such resources must be identified on an area to area basis. Uniqueness and diversity is a strength of the mountain resource base that needs to be focused, as these areas cannot compete against products and services produced in the plains. Furthermore, diverse resources require different approaches towards their identification, development, conservation, and use. The unique mountain environment, in terms of natural beauty, scenic grandeur, biodiversity, ruggedness of topography, and cultural heritage, constitutes a resource that needs to be conserved and promoted for tourism of various types. Limited arable land, the primary resource for the livelihoods of mountain people, needs to be put to uses and technological treatments that enhance its productivity; non-cultivated, non-forested land could be used in productive ways, e.g., for horticulture and commercial plantation, to combine economic and environmental benefits. Forests could similarly be developed, conserved, and used with suitable mechanisms to meet the twin objectives of environment and economy. In the case of water resources, many mountain areas face a paradox of plenty with scarcity; huge quantities of water flow down the rivers, often in deep gorges, but villages above them face acute scarcity of water for drinking and irrigation. There is heavy rainfall during a few months, while for the rest of the year there is drought. Access to water for drinking and irrigation through the use of appropriate river technologies and rainwater harvesting is of crucial importance for sustaining livelihoods. On the other hand, use of water resources for power generation, especially on a small-scale decentralised basis, would lead to the improved well-being and productive capacities of mountain communities.

Productive resources available in mountain areas are, more often than not, thinly spread over space, each location offering a small quantity and thus limiting the scale of economies of production and marketing, and are also often liable to quick exhaustion if used indiscriminately without

attempt at conservation and regeneration. This is particularly the case of non-timber forest products such as medicinal, herbal, and aromatic plant resources. A systematic assessment of the locations and quantities of such resources is therefore necessary from both the economic and conservation angles. Introduction of area-wide large-scale production and regeneration of resources can be useful and effective in this respect and needs to be systematically explored.

Mountain people should have access to their local natural resources so that they can use them productively. However, access often is denied to them ostensibly for reasons of conservation. Thus, they cannot use or have only restricted access to plant resources from the state-controlled forests, protected areas, and sanctuaries. Many communities have lost their traditional rights to use these resources, as a result of new laws relating to forests and natural resources and with the conversion of large areas into sanctuaries and reserves. Regulating use of environmentally sensitive resources is quite understandable, though it is debatable whether the environmental degradation has been caused mainly by the actions of local communities or by policies and actions of the state or large business enterprises from outside. Notwithstanding, it should be possible to find ways to conserve the environment without jeopardising people's livelihoods. Conservation efforts may have better chances of success if local people are associated with them and benefit from them. Mechanisms to entrust the management, conservation, and use of natural resources to local communities have been successfully implemented in some cases and could be emulated on a wider scale. Use of incentives and disincentives within suitable legal and institutional frameworks should be preferred over approaches like total bans or denial of access.

Collective institutions

In mountain areas, most of the productive resources are collectively, rather than privately, owned. Leaving aside a small fraction of land under cultivation and a small proportion of land under non-agricultural uses by individual households, all land, forests, pastures, and water resources are under state or community ownership. Therefore, livelihoods, to a great extent, depend on state policies and actions and the capability of communities to manage and use these resources and share the benefits among their members. Also, private actions of households in using resources under their control have significant positive and negative externalities on the well-being of the communities. The role of communities and community- based organisations, therefore, is extremely important not only for managing common resources, resolving conflicts, and determining access to and benefits from these resources, but also as channels for voicing the interests, concerns, and

claims of mountain communities. In the sphere of productive activities, the small-scale production of individual households and units suggests that producers should organise to gain access to technology and inputs and to market products in order to reduce transaction costs per unit of production and improve bargaining power to realise lower procurement costs and better product prices.

An area-based approach

Diversity in ecological conditions and resource endowment and lack of connectivity with other areas within mountain regions warrant an area-wide focus in development. This is likely to be more effective than an approach targeting households, since the area rather than household characteristics constitute the main source of poverty, as argued earlier. Delineation of an area for strategic programme interventions could best be carried out on the basis of a watershed approach, but it is necessary to combine socioeconomic features with physical characteristics to define and make a watershed the basis for planning development and poverty-alleviating interventions (Papola 1996). At the same time, a watershed, small or large, is a part of a larger economic space with linkages to and interdependence on other spatial units. In this context, it is important to explore and develop rural–urban linkages and the role of small towns as market and service centres. These towns have a vital role as links between villages and cities, which are located far way from most mountain areas. From the economic perspective, it would be useful to graduate from a watershed to a market-shed approach for development planning, with a town in the centre providing market linkages to villages in the hinterland.

Use of spatial methodologies

Unlike the plains, space in mountain areas is characterised by discontinuities and extreme and frequent variations. Therefore, any approach with a linear treatment of space is not suitable here. Methodologies for resource assessment and development planning have, therefore, to be highly sensitive to spatial variations. Mapping techniques using tools like Geographical Information Systems (GIS), therefore, have particular significance in mountain areas. Maximum use of such methodologies needs to be undertaken to portray living conditions and poverty and geographical distribution of the resource base, infrastructure, and market linkages for planning and implementation of programmes.

Role of the state

In the current context of greater reliance on markets for development and poverty alleviation with only a minimal role for the state as a facilitator,

the mountain areas are in danger of further marginalisation insofar as market failures afflict these areas more than other better-endowed ones. The state would, therefore, need to continue not only investing in infrastructure and services, but also in evolving policies that favour these areas to ensure that markets function better and that the risks and effects of market failures are minimised. Ensuring food security will be essential to facilitate diversification of mountain economies into market-oriented development of products with a comparative advantage, and the state will need to play a role initially until the markets become profitable enough for private trade to take over. Pro-mountain policies can be justified not merely on the grounds of equity, but also on the grounds that mountain people need to be compensated for the deprivation and cost involved in conserving an environment that is necessary for sustaining development and livelihoods of the people and economies in downstream areas. Investments made by governments and the society at large, including the private sector, in developing mountain areas and for the welfare of mountain people need to be seen as the price of the environmental services rendered by them rather than as dole and subsidies in the conventional sense.

Analysis and advocacy

Such an approach towards development of mountain areas and poverty alleviation among mountain people can emerge only if the government, civil society, private sector, and international organisations are convinced that the fate of larger, national and global economies and societies is linked to a great extent with that of mountain areas and people. It is, therefore, important to investigate the value of mountain resources, and the costs and benefits of mountain environments, both to the local communities and to wider national and global development and sustenance. Investigating highland–lowland linkages and sharing the results with governments, the private sector, and the international community will allow appropriate mechanisms for rational and equitable sharing of costs and benefits to evolve.

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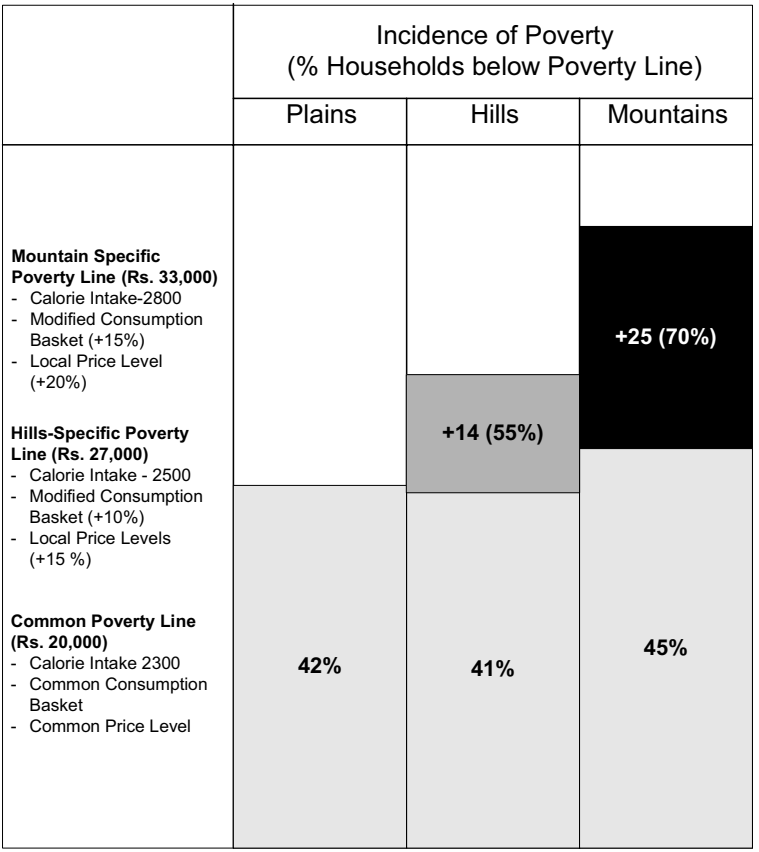
Annex 1: Poverty Levels and Trends in Selected HKH Areas

Country/Province/ Area	Incidence of Poverty (% population below poverty line)		Trends	
	Year	%	Period	Percentage point change
China (rural)	1993	8.7	1988-93	-5.2
	2000	3.0	1993-2000	-5.7
Sichuan	1993	7.0	1988-93	-9.7
Yunnan	1993	22.9	1988-93	-0.9
Tibet	1993	10.1	1988-93	-22.2
India	2000	26.10	1993-2000	-9.9
Arunanchal Pradesh	2000	33.5	1993-2000	-5.9
Assam	2000	36.1	1993-2000	-6.5
Himachal Pradesh	2000	7.6	1993-2000	-20.8
Manipur	2000	28.5	1993-2000	-5.2
Meghalaya	2000	33.9	1993-2000	-4.1
Mizoram		19.5	1993-2000	-6.2
Jammu & Kashmir	2000	3.5	1993-2000	-21.7
Nagaland	2000	32.7	1993-2000	-5.3
Sikkim	2000	36.5	1993-2000	-4.9
Tripura	2000	34.5	1993-2000	-4.5
Nepal	1996	42.0	1992-96	-7.0
Mountains	1996	56.0	NA	NA
Hills	1996	41.4	NA	NA
Pakistan	1991	17.2	1985-91	-1.1
Balochistan	1991	7.1	1985-91	-20.4
NWFP	1991	20.0	1985-91	+10.4

Annex 2: Alternative Poverty Estimates Using Mountains/Hills Relevant Consumption Expenditure Norms (An Illustration)



Note: The bottom % are actual estimates for Nepal during 1994-95. Other estimates are meant to illustrate the methodology.

Annex 3: An Illustrative Listing of Activities in Mountain Areas with Varying Economic Benefits and Environmental Costs (ranks are relative among the 20 activities selected)

Assumption I Availability of Resource (Supply Base)	Activity	Rank by Economic Benefit to Local People (Starting with Maximum)	Rank by Environ-mental Costs (Starting with Minimum)	Assumption II Demand (Own Use or Market)
	Cereal cultivation	1	10	
	Fruit cultivation	2	2	
	Off-season vegetables	3	3	
	Livestock	4	13	
	Agro-processing	5	11	
	Fruit Processing	6	12	
	Timber Products	7	17	
	Micro-hydro Plants	8	5	
	Medicinal Plants, Growing and Processing	9	6	
	Bamboo Products	10	16	
	Saw Mills	11	18	
	Wool-based Textiles	12	14	
	Handicrafts	13	7	
	Trekking Tourism	14	9	
	Conservation Tourism	15	4	
	Stone Quarries	16	19	
	Cement Factories	17	20	
	Electronic Products	18	8	
	Beekeeping	19	1	
	Natural Fibre-based Products	20	15	

Notes: 1: The list of activities is only illustrative, more could be identified.
2: Rankings are also illustrative and not necessarily based on detailed examination of benefits and impacts.

Chapter 6

The Importance of Development Indicators for Assessing Mountain Development

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Contemporary approaches and concepts

The International Year of the Mountains 2002 (IYM) may be regarded as a climax of mountain research, at least from the awareness and publicity point of view. The IYM—which resulted in the Cusco declaration on sustainable development of mountain ecosystems, a policy-related closing meeting in Bishkek, and the Global Summit in Johannesburg—has highlighted the connection of peace to improved living conditions on the one hand and the interrelationship of political and societal conflicts to pauperisation and badly affected livelihoods on the other. Mountain development has been selected during this year as a prime focus for the implementation of programmes. At this point we have to ask how academic research and development practice are cooperating and in which fields activities are being executed. Furthermore, it is important to know what diagnosis is the starting point of activities and how effects and success are measured.

The last decade has seen a growing effort in mountain research[1], and some of the widely attended discussions prominently take place on the internet—e.g., the 'mountain-forum' and associated networks. Since the commencement of the UNESCO-sponsored ' Man and Biosphere' project more than a quarter century ago, interest has been directed towards the interrelationship between human beings and their environment (cf. UNESCO 1973). Attitudes regarding human interference in high mountain regions range between two extremes: resource use and creation of the cultural landscape in a positive estimation; environmental degradation

[1] Cf. Messerli and Ives 1997, Price and Butt 2000, Funnel and Parish 2001, Kreutzmann 2000, Parish 2002

and destruction of natural resources as a negative impact.[2] The field of enquiry has been differentiated and the human–environment relations are discussed on a variety of topics. Contemporary high mountain research in this interface addresses several fields.

Population dynamics and mobility

Population growth in high mountain regions cannot be explained by fertility and mortality patterns alone. Intra-mountain migrations and extra-mountain mobility are significant contributors to population processes. The expansion of community territories and participation in seasonal and/or regular economic activities beyond the settlement region need to be accounted for as well.[3] Extra-mountain mobility is a prime strategy for participation in exchange relations, global communication, and trans-national migration.

Land-use and land-cover change

The conflict potential generated by competition for limited communal resources is a growing feature of social conflicts not only in mountain regions, but elsewhere as well. The loss of the commons and territorial disputes about cultivable land and pastures bind substantial resources in less productive activities (cf. for the Hindu Kush and Karakoram, Ehlers & Kreutzmann 2000). The importance of space is addressed in different commissions of the International Geographical Union (IGU), especially in the Land Use/Land Cover Change (LUCC) project (cf. Lambin et al. 2001) which compiled a database and implemented a research programme for the Hindu Kush-Himalayas (cf. as well Blaikie & Sadeque 2000) among other areas (cf. Teklea & Hedlund 2000).

Survival strategies in the mountain periphery

High mountain research in developing countries features many aspects related to survival under peripheral conditions. The use of marginal resources, the supply of basic food items for local communities, and the exploitation of niche production also are aspects of market access in the framework of deregulation and globalisation. 'Growth, poverty alleviation and sustainable resource management in the mountain areas of South

[2] Immediate remedies are seen in the exclusion of territories from uncontrolled human interference as conservation zones and/or protected areas (cf. Doempke and Succow 1998, IUCN 1996).

[3] Cf. for Nepal Ortner 1989, van Spengen 2000, for an example from the industrialised world the case of Japan's mountain regions illustrates the transregional interrelationships prominently cf. Ajiki 1993, Okahashi 1996.

Asia' was the topic of a conference held in Kathmandu. Local activists, bureaucrats, development experts, and researchers participated in a dialogue about different perspectives.[4]

Decreasing entitlements of marginal groups

Competition for limited resources can be enhanced by private and state interference leading to the loss or expropriation of community assets. Thus along with deprivation of property rights the local population loses its grip on previous entitlements (cf. Saberwal 1999). This holds especially true for the least privileged and marginal groups. At the same time development actors arrive on the scene suggesting projects in regional planning aiming to improve the living conditions of mountain communities according to the development fashion of the day. Property rights in areas without cadastral surveys or with weak institutions should be secured for local mountain communities. Aspects of 'mountain laws and peoples' were discussed electronically within the 'mountain-forum' platform, and the results were published in a brochure (Lynch and Maggio 2000).

Resource management and energy provision

Sustainable use of available fuel resources needs to be compared with the local energy sector, present consumption of fossil assets, and the potential future growth scenario (cf. Clemens 2001, Rijal 1999). In line with a growing population and changing living conditions, a higher demand for natural resources and energy provision is expected from local consumers. In addition, external players are competing to exploit timber resources and to develop energy, e.g., by construction of high dams (McCully 1996). Deforestation, transport of logs using modern traffic infrastructure, and the use of potential hydraulic energy for extra-mountain consumption are fields of conflicting interests. The results of an electronic conference that addressed these issues were recently published by Butt and Price (2000).

Water as the prime resource of competition

The water issue has been highlighted as a resource asset and problem for high mountain regions; several studies have cited this issue as an example of localised resource potential that is traditionally harvested and used locally or by transport of rivers in the forelands.[5] Political and economic conflicts appear when external players introduce large-scale projects with significant local effects and export of profits. Consequently, the integration

[4] The key papers and results were published by Banskota et al. 2000.

[5] Cf. Banskota & Chalise 2000, Horta 1995, Kreutzmann 1998, 2000, Nüsser 2001, Pande 1995, Vincent 1995.

of marginal regions into the national and global market economy poses a threat of losing control over resources. The World Commission on High Dams was introduced in 1998 to settle disputes and to enhance communication among different interest groups in the style of 'round tables'. It aims at optimising project planning and development.[6] The controversial water issue features quite prominently in the Cusco declaration on sustainable development of mountain ecosystems (http://www.condesan.org) and illustrates competing interests over resources in mountain regions and strategies for their use. Key ideas in the Cusco declaration of 2001 include: "integrated watershed development; participation of communities, civil society, and governments; responsibilities for regulation, control, and conservation; respect for traditional organizations, culture, and customary rights; economic compensation policies for mountain populations for the services rendered to develop lowlands."

The aims and development strategies envisaged here for mountain regions lead towards sustainable development and participation in globalised economies whatever the meaning of this might be. Conflicts of interest among different actors, power struggles, economic and political intervention, external and sometimes inappropriate development models fill the spectrum in which mountain development takes place. If mountain regions and their inhabitants are treated as part of world society, then we must assess what we really know about the development deficits and potential of these areas. The hypothesis presented here is that mountain regions are singled out without appropriately considering their incorporation into nation states, administrative structures, and economic networks. There are many experiences from industrialised countries where regional planning and domestic subsidies required detailed information and databases (cf. for example the Swiss 'transformation' study, Brugger et al. 1984). In the context of mountain regions in developing countries where uncountable mountain-related NGOs are based and where numerous development programmes are implemented, there is a significant lack of basic knowledge about assessment of perceived deficits. How do development actors know where to alleviate poverty by initiating a programme? On a global scale we are used to different systems of indicators which are structuring the world on a country by country basis. What information do they contain about mountain areas? In 1997 the International Centre for Integrated Mountain Development (ICIMOD) published indicators of development projected on the districts of Nepal, in which a variety of single and complex indicators was applied in an

[6] The results were presented and are available under http://www.dams.org.

exercise to rank district-wide data in three categories of 25 districts each. Thus, we achieved a tripartite picture of relative ranking (Figure 1). Without knowing how close or far the districts are off mark, these three equally-sized classes provide a regional clustering. Could they be helpful in identifying development deficits? Do these data provide a comparative perspective? Can we compare the development efforts in Nepal with those in neighbouring countries?

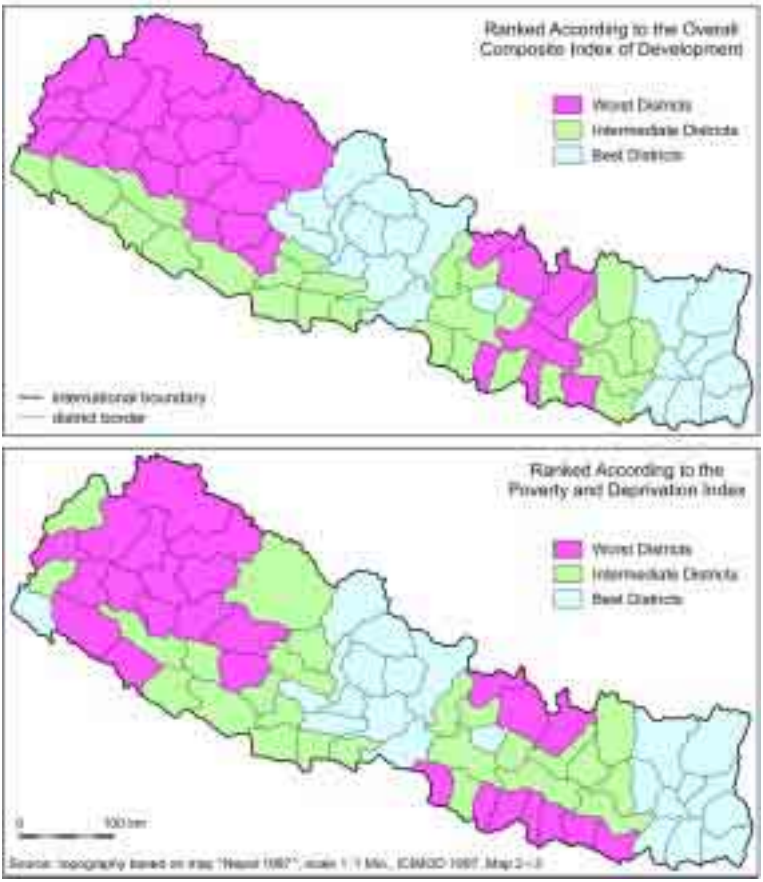

Figure 1: Ranking of Nepalese districts on the basis of the composite index of development and of the poverty and deprivation index

The human development index (HDI) and its application for mountain areas

Indicators about quality of life have been introduced to illustrate regional disparities, deficiencies in infrastructural assets, and inequalities in access to socioeconomic resources and opportunities. A widely used indicator is the Human Development Index (HDI), which relates to a United Nations initiative to reduce the shortcomings of the one-dimensional per capita income, an indicator preferred by the World Bank and global financial institutions. The HDI aims at acknowledging non-monetary transactions as part of domestic economies and at highlighting development impacts that cannot be linked causally to monetary incomes at all. Nevertheless, the first dimension of three is the HDI's expression of per capita income in units of purchasing power parity (PPP); the other two address quality of education and life expectancy. For our discussion about the standard of development in mountain regions, these parameters have to be tested.[7] HDI data are mainly available on the basis of nation states, which immediately poses a practical problem.[8] Statistical entities are seldom congruous with relevant units of investigation. In a number of cases the available data are just the result of rough estimates, an indicator of data quality.

In the case of mountain regions in developing countries, we find data about nation states in which mountain areas are located (Table 1). The range goes from some of the poorest countries, such as Afghanistan and Ethiopia, to states in the Latin American cordilleras. In a similar category we find the countries of the former USSR. None is recorded above the middle level (= 0.500 up to 0.800) of the HDI. Such statistical data permit comparisons of nation states, but they fail to provide the information required about regional disparities within mountain regions and about highland–lowland differences. The dilemma of data evaluation becomes quite obvious. What knowledge is available for mountain regions and what kind of statements can be made?

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[7] Here I omit a necessary and most probably enlightening discussion about the theoretical and methodological justification and interpretational implications of quality of life indicators, cf. for controversial appreciations Kreutzmann 2001, Papola 2001, and Rhoades 2001. Practical information about the definition, configuration and mathematical base of the HDI can be found in http://www.undp.org/undp/hdroanatools.htm

[8] The availability of Human Development Reports gained amazing momentum in recent years: national reports are available for Bhutan, China, Tajikistan, Kyrgyzstan, Nepal — all of which are used in the discussion here. Reports for three Indian provinces, including Sikkim, initiated the process in India, and regional reports for South Asia have been published by the Human Development Centre in Islamabad, Pakistan.

Table 1: Human development indices for selected mountainous countries, 2000

Region	Country	Area (103 km2)	Population (millions)	Life expec-tancy at birth	Adult literacy rate (%)	Enrolment ratio (%)	PPP (US $)	HDI	HDI rank	GDI	GDI rank
Africa	Ethiopia	1097	62.9	43.9	39.1	29	668	0.327	168	0.320	142
	Uganda	236	23.3	44.0	67.1	45	1208	0.444	150	0.437	125
	Kenya	580	30.7	50.8	82.4	51	1022	0.513	134	0.511	112
	Rwanda	26	7.6	40.2	66.8	40	943	0.403	162	0.398	135
South and	Papua New Guinea	463	4.8	56.7	63.9	38	2280	0.535	133	0.300	110
Southeast	Myanmar	677	47.7	56.0	84.7	55	1027	0.552	127	0.548	106
Asia	Bhutan	47	2.1	62.0	47.0	33	1412	0.494	140	NA	NL
	Nepal1)	141	23.0	58.6	41.8	60	1327	0.490	142	0.470	119
	India	3288	1008.9	63.3	57.2	54	2358	0.577	124	0.560	105
	Pakistan	796	141.3	60.0	43.2	40	1928	0.499	138	0.468	120
Central	Afghanistan2)	652	24.8	45.0	31.0	NA	< 785	0.229	NL	NA	NL
Asia	Kyrgyzstan	198	4.9	67.8	97.0	68	2711	0.712	102	NA	NL
	Tajikistan	143	6.1	67.6	99.2	67	1152	0.667	112	0.664	94
Latin America	Guatemala	109	11.4	64.8	68.6	49	3821	0.631	120	0.617	100
	Colombia	1139	42.1	71.2	97.7	73	6248	0.772	68	0.767	56
	Ecuador	284	12.6	70.0	91.6	77	3203	0.732	93	0.718	80
	Peru	1285	25.7	68.8	89.9	80	4799	0.747	82	0.729	73
	Bolivia	1099	8.3	62.4	85.5	70	2424	0.653	114	0.645	96

HDI = Human Development Index GDI = Gender-related Development Index; NA= no data available; NI= no data listed
1) The data used in UNDP publications significantly differ from those published by Nepal South Asia Centre for 1996.
2) The data for Afghanistan are based on estimates for 1995-97.
Sources: UNDP 2002(a&b), World Bank 2002

For a few mountain areas regionalised data can be discussed (Figure 2, upper left diagram). In Tajikistan the difference between the nation state and the mountain district of Gorno-Badakhshan seems negligible. Similar observations hold true for India and Pakistan when provinces are compared. The Himalayan state of Himachal Pradesh reaches similar HDI values as the Indian Union on average, the newly created union state of Uttaranchal even ranges at a higher level (Figure 2, bottom left). But deviations from this pattern become obvious when the Karakoram district of Gilgit is compared with the North-West Frontier Province (incorporating most of Pakistan's share in the Hindu Kush) and the nation. Gilgit fares much lower in all components, but especially when the standard of living is concerned (Figure 2, upper left diagram). In China the mountainous provinces of Qinghai, Tibet (Xizang), and Xinjiang rank below the country's average in life expectancy and educational attainment (Figure 2, upper right diagram). The standard of living is above average in Xinjiang and Qinghai (UNDP 2002b). Xinjiang's significant deviation is due to inter-provincial regional disparities. The industrialised northern part of the province excels in terms of living standards, while less contribution stems from the mountainous south and west. Taking size and diversity of some provinces into account, no reliable information can be derived for the Tien Shan, Kun Lun Shan, and Qilian Shan Mountains. The Tibetan Plateau is represented by Xizang. While China and India differ considerably, Tibet ranks at par with Uttaranchal (Figure 2, bottom left diagram). These data must be interpreted carefully. Nevertheless, a growing database and a refined regional approach allow for some conclusions which draw closer attention to the problems of poverty measurement in mountain regions.

In Nepal, which has a very low national HDI value of 0.325, the mountain regions have a value of 0.277. Within the high mountain districts (Figure 3), major differences occur, and there is also a gap between the low end in Mugu (0.147) and the top level performance of Sankuwasabha (0.365). Nepal is one of the few countries for which district-wise data are available on a large, comparative scale, which allows us to test the hypothesis that mountain regions should be always worse off than the rest of the country.[9] In Nepal it would be expected that its three zones—Terai, middle mountains, and the high mountain region (Figure 4)—would show decreasing HDI values along a southwest–northeast orthographic profile. The results differ significantly: districts of supreme centrality such as Kathmandu and Kaski (Pokhara)—but also Morang and Jhapa in the Terai—fare best, while Mugu in the mountainous north-west remains at the low end. According

[9] Data are based on Nepal South Asia Centre 1998 (data for 1996) which differ quite a bit from the nation's average which is used in UN statistics.

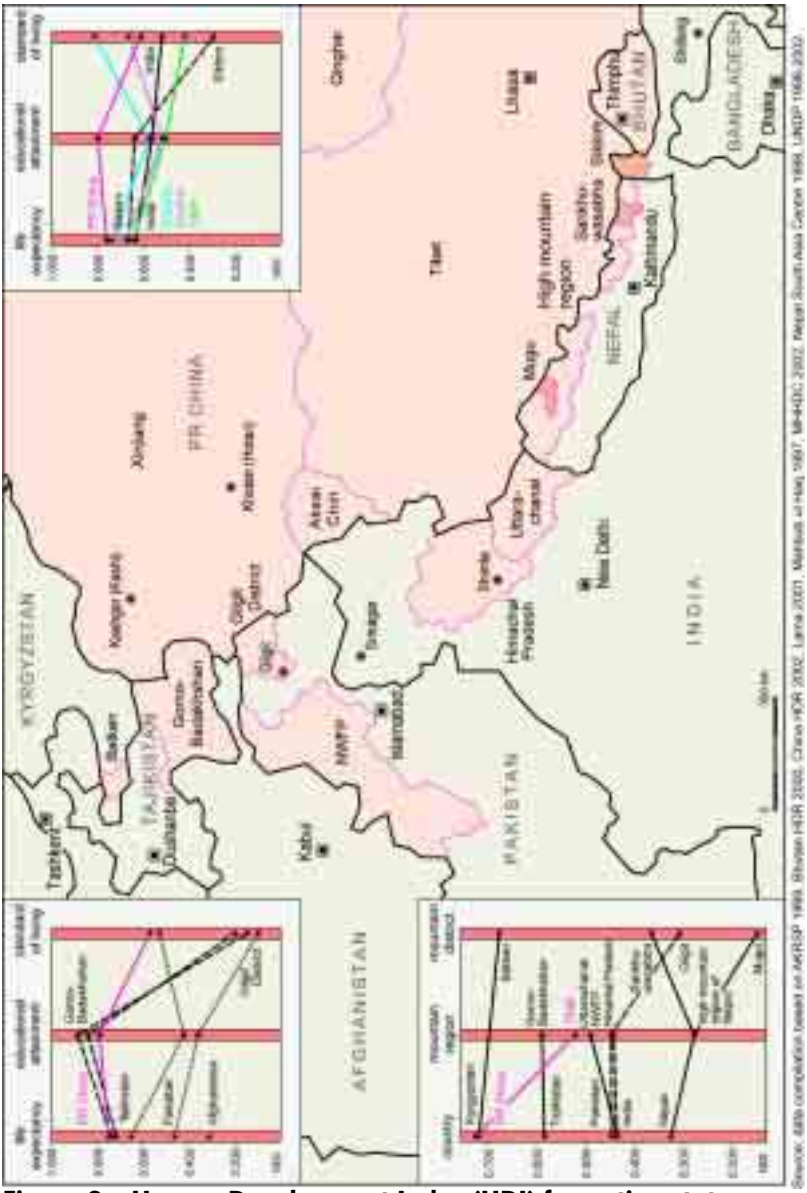


Figure 2: Human Development Index (HDI) for nation states and mountain districts in High Asia

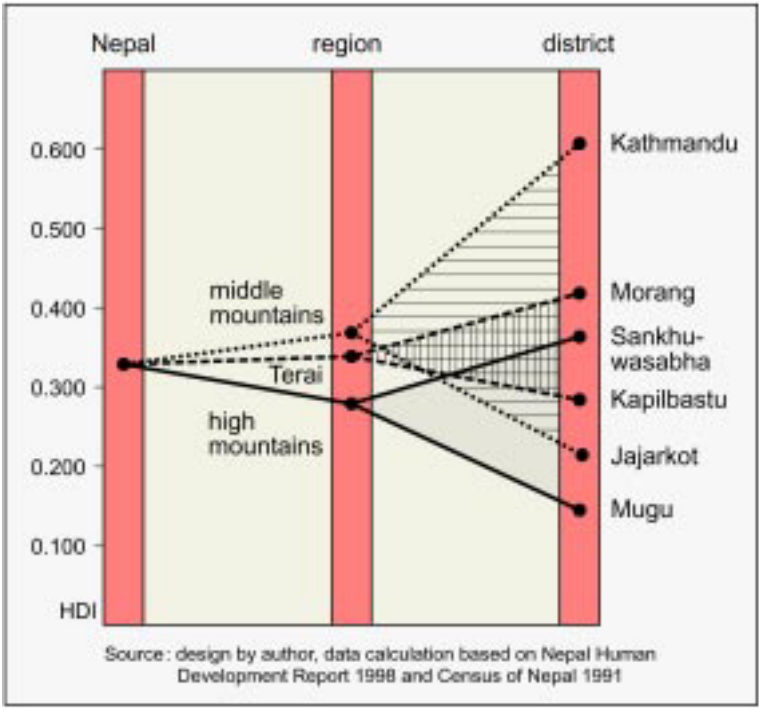
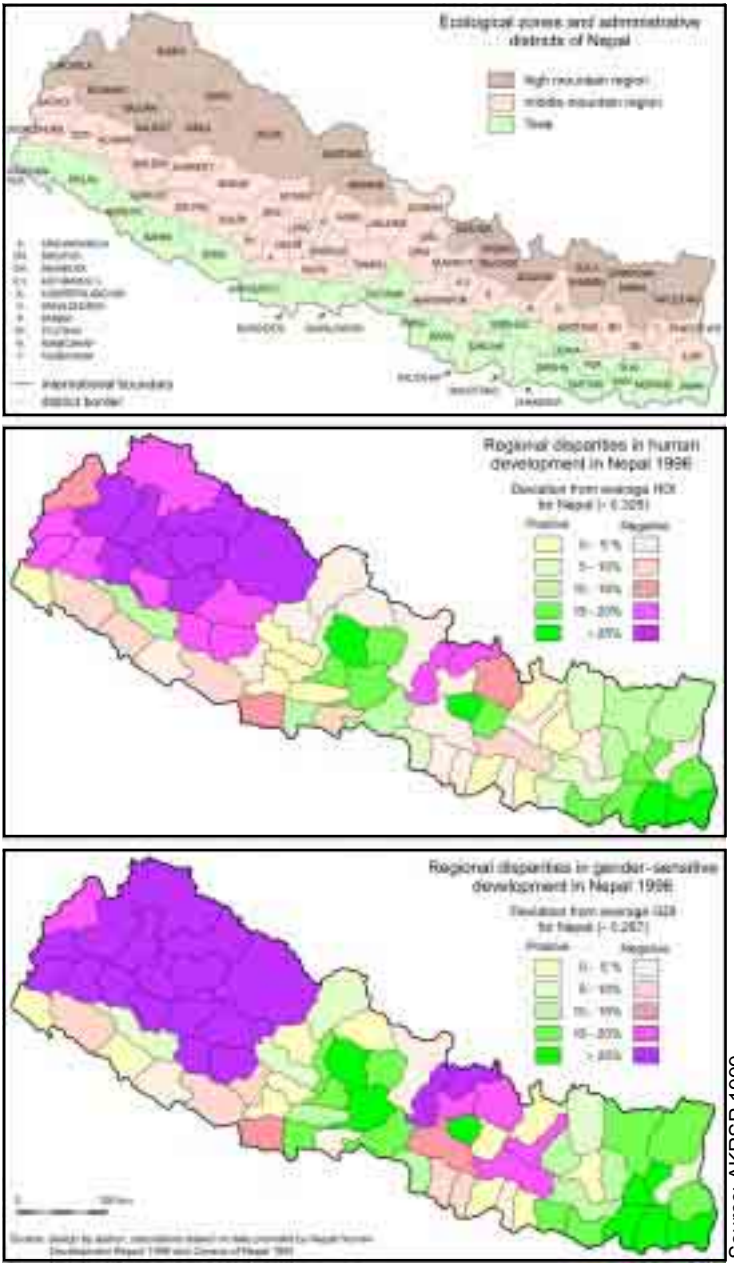


Figure 3: Nepal - HDI values for the Terai, middle mountains, and high mountain regions

to a study by the Nepal South Asia Centre (1998), this gap is demonstrated by a life expectancy in Kathmandu nearly double that of Mugu (67 to 36 years). The estimates of education differ even more: only 19% of Mugu's adults are literate, while 71% in the capital can read and write. It has been argued (Rhoades 2001) that this information does not reflect the 'real' conditions of development. Of course, it does not. Nevertheless, we find here a tool that is widely used in development practice for diagnosis. If activities in that field are at stake, then we must discuss what interpretations are possible and what remains to be desired from other indicator systems. For a comparative study, there seem to be few alternatives available at present.

For a discussion of the suggestion that mountain regions are always worse off than lowland regions—a statement which has often been repeated during several meetings and conferences in the course of IYM 2002 (cf. Papola 2001, p. 4)—a closer look at regionalised data might offer some insight. When all district-wise data are aggregated in the three orthographic



Source: AKRSP 1999

Figure 4: Orthography, administrative structure, and regional disparities in human and gender-related development for Nepal, 1996

categories structuring Nepal, the middle mountains fare best with an HDI value of 0.357 (above Nepal's average), closely followed by the HDI value for the Terai at 0.343, while the high mountain districts produced a significantly lower value of 0.277.

The interpretation of regionalised data for Nepal shows a difference between the western parts of the country—irrespective of orthography they fare lower than average—and the urban (and tourism) centres and the south-east. The urban–rural bias as well as the east–west disparity seem more prominent than orthography (Figure 4, middle). Similar disparities are reproduced when the gender-related development index (GDI) is applied (Figure 4, bottom). Again, data quality and the appropriateness of indicators might be questioned. The exercise presented here is meant to stimulate discussion about the possibilities of illustrating development gaps, regional disparities, and consequently the eventual uniqueness of regions in the context of mountain geography.

Explanations of development gaps need to be sought in the overall economic and socio-political context of a country like Nepal. The neighbouring Himalayan districts of Himachal Pradesh in India fare significantly better than western Nepal. Nevertheless, both areas are in the category of low human development (HDI < 0.500).

The Hindu Kush and Afghanistan especially are white spots on the development map as no data are available. Tajikistan and Pakistan, though neighbours sharing common mountain ranges, differ quite a bit in HDI values (cf. Figure 2). The administrative unit (oblast) of Gorno-Badakhshan in the Pamir region complies with the rest of Tajikistan and is significantly above Pakistan's average. In Tajikistan the Soviet model of modernisation that brought basic infrastructure, supplies, and overall education even to remote parts are evident from the high values of life expectancy and level of education. The significant difference in the standard of living shows the socioeconomic pauperisation of most people since the collapse of the Soviet Union and the introduction of economic reforms by the newly independent state.[10] The supply situation is extremely bad at present, quite different from the Gilgit District in Pakistan's Northern Areas, although the standard of living index is even lower there. The share of subsistence production compensates for overall supply deficits. The gaps in the values for Pakistan and Gilgit (cf. Figure 2) are most significant in the dimensions of life expectancy and standards of living. Both reflect the overall deprivation of adequate social infrastructure and business opportunities in the Northern

[10] For a more detailed account of the transformation in post-Soviet Gorno-Badakhshan cf. Mamadsaid and Bliss 1998, UNDP 1998.

Areas. The mountain people of the Karakoram feature as marginal groups when entrepreneurship and market participation are highlighted. Only the level of education has improved and come close to Pakistan's average, due to communal, national, and international literacy and education programmes (cf. Kreutzmann 1996). This brief discussion shows the scope and limitations for data interpretation.

Future prospects for mountain development

The data deficit has become obvious during this evaluation of information available for assessing development deficits in mountain regions. In recent years development agencies and practitioners have reacted. Qualitative and quantitative information on project areas are collected in a more sophisticated manner. For a number of Central and South Asian countries, annual Human Development Reports are compiled. If the livelihood strategies (cf. Bohle and Adikhari 1998) and living conditions of mountain people are the focus of development activities, then the level of knowledge needs to be enhanced, and appropriate concepts for the assessment of poverty conditions are required. The discussion of the HDI can only be the first step towards a more informed debate about the significance of mountain regions and the visibility of mountain people in a participatory approach.

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Chapter 7

Management and Use of Natural Resources for Poverty Alleviation in Mountainous Areas of Western China

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Introduction

Occupying one-fifth of the world's land surface, mountains are an important component to biological diversity (Becher and Bugmann 2000; Turner 1997). Furthermore, they are a source of key resources such as minerals, forest products, and agricultural products. About 10% of the world's population depends on mountain resources (Wu Jishan 1994). As a major ecosystem representing the complex and interrelated ecology of our planet, mountains are extremely vulnerable to human activities and natural processes causing ecological imbalance. Mountains are the areas most sensitive to all climatic changes in the atmosphere. They are susceptible to accelerated soil erosion, landslides, and rapid loss of habitat and genetic diversity (Norbert et al. 2000), which have been the critical eco-environmental problems of the world.

In the past 10 years, the United Nations (UN) has played a key role in promoting understanding of poverty in mountainous areas and the importance of reinforcing the management of natural resources. UNCED(1992) in Agenda 21, entitled 'Managing Fragile Ecosystems: Sustainable Mountain Development' stated : "On the human side, there is widespread poverty among mountain inhabitants and loss of indigenous knowledge. As a result, most global mountain areas are experiencing environmental degradation. Hence, the proper management of mountain resources and socioeconomic development of the people deserve immediate action." The Secretariat of UNCSD emphasised that mountainous areas have many disadvantages when compared with the

plains, so we should pay special attention to them (UNCSD1997). Due to increasing poverty and social pressure, mountain ecosystems will further degrade, and this may have an important effect on global environmental change (Peterman and Peters 1998). Hence, it is necessary to develop special regional policies for the exploitation and management of mountain resources and to monitor changes in mountain ecosystems and their effects (Guisan and Holten 1995). In November 1998, the 53rd UN General Assembly declared 2002 as the International Year of Mountains (IYM) and called upon governments, international organisations, and non-governmental organisations to implement programmes for sustainable mountain development.

Mountainous areas occupy two-thirds of China and provide a direct life-support base for one-fifth of China's population. There are two challenges in implementing sustainable mountain development in China—the degradation of ecological environments and the high level of poverty in mountainous areas (Liu Yansui 1999a). Mountain development strategies have to focus on two tasks: the effective protection of mountain resources while using them and alleviating poverty as a development priority.

Ecological environment and poverty in mountainous areas

Regional spread of mountain areas

A mountain is a natural complex having altitude and slope. In general, a mountain country or district is a region where mountainous areas occupy above two-thirds of the total area (Xu Qiaoli and Tan Chuanfeng 1994). China is a typical mountainous country, with 1540 mountain counties, 661 counties in the plains, and 103 pastoral counties. There are 601 mountain counties in western China, 500 in middle China, and 439 in eastern China, occupying 76, 66, and 58% of each region's counties, respectively (Wang Weizhong 1999) (Table 1). Eastern, middle, and western China are all dominated by mountain counties. Figure1 shows the status of the physical environment in China.

Ecological conditions of mountainous areas and features of poor counties

To some extent, the ecological conditions of a region are products of human–nature interactions. With the help of GIS techniques, we assessed and analysed the environmental conditions of China using the assessment index system and the basic factors' database (Figure 1). The areas with the worst environmental conditions lie in the Second Step of Topography in China (Ye Qinghua et al. 2000), southwards from Hulunbuir that lies at the foot of the Da Hinggan Mountains, extend from north to south-west, pass by the south and east of Inner Mongolia, the north of Shaanxi, the southeast of Ningxia and Gansu, the northwest and south of Sichuan, till reaching the north of Yunnan. The extent of environmental degradation shows an increasing trend as one moves from north-east to south-west in mountainous areas across China. These areas include 1163 counties. The distribution of poor counties in China coincides with the distribution of fragile eco-environmental zones. The 18 high-poverty areas in middle and western China are the eco-environmentally most endangered areas located in remote mountainous areas covering rocks, high-cold desert areas, loess plateau areas, and so on (Lu Dadao et al. 2000). The number of poverty counties in these areas accounts for 87% of the total number of poverty counties in China. The vulnerability and instability of mountain physical conditions are the basic conditions leading to the degradation of ecological environments. The irrational exploitation of resources leads to

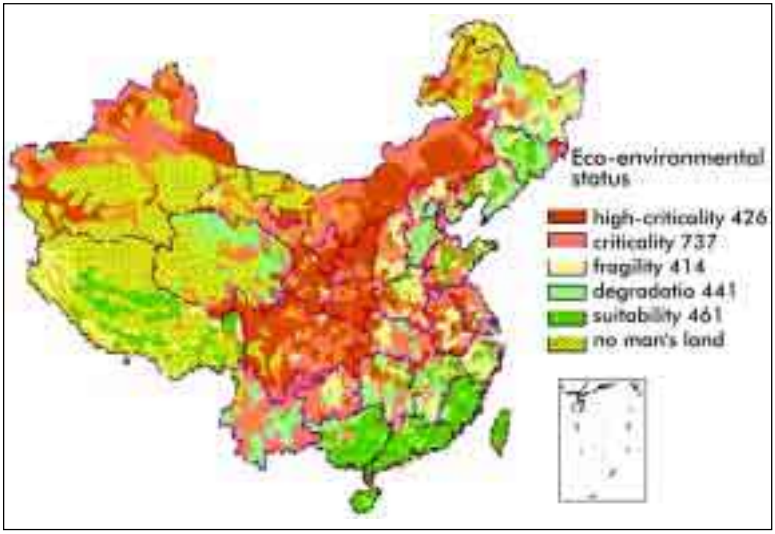

Figure 1: Eco-environmental situation and distribution of mountainous counties in China

the degradation of ecological environments directly. However, economic deprivation and the survival needs of the poor are the endogenous driving forces of the degradation of ecological environments.

Natural resources and environmental conditions in poverty-stricken mountainous areas

The distribution of the poor has a typical regional character. By the end of 1992, there were 80 million poor in China, accounting for 8.8% of the rural population. Most of these people live in the vast mountainous areas of middle and western China. These areas have many common characteristics: remoteness, limited and difficult transportation, ecological imbalance, unfavourable physical conditions, outdated production practices, low crop production, shortage of living energies, dependence on single sources of income, limited work opportunities, and information obstruction. Among these poor areas, there are two typical poverty-stricken regions: one is the 'Three-West'(Hexi and Dingxi of central Gansu, Xihaigu of southern Ningxia) loess plateau arid areas, with an area of about 380,000 sq.km. There, vegetation is sparse, desertification and soil erosion are serious, the water table is low, and aridity and water shortages are severe. Another is the karst areas lying in Yunnan, Guangxi, and Guizhou, covering an area of about 450,000 sq.km. Due to the excessive exploitation of natural resources, destruction of vegetation is very serious, the rocks are bared, and precipitation flows or vapourises very soon. The environmental reasons leading to the poverty of the two regions are: (i) the population exceeds the carrying capacity of the environment causing a vicious circle of resource extraction causing resource scarcity and promoting poverty, which again pushes increased resource use; (ii) the water shortage is severe, irrigation facilities are deficient, aridity is very serious, agricultural production is low and unstable; (iii) there is lack of scientific planning and effective management of natural resources in keeping with limitations and potentials.

Poverty alleviation and poverty trends in western China

Since the reform and opening policies were carried out, China has recorded several achievements in the area of poverty alleviation. Through rural institutional reform, innovation, and systematic designing and implementation of the National 8.7 Poverty Eradication Programme, the number of rural poor has decreased from 250 million in 1978 to 30 million in 2000, and the poverty incidence dropped from 31% in 1978 to about 3% in 2000. The number of poor in the 12 provinces, autonomous regions, and municipalities in western China accounted for 51% of 80 million people in 1993. This had declined to 30 million people (or 50%)

at the end of 2000. In 1993, China had 592 national-designated poor counties, of which 366 were in western China. Thus western China is the most important and difficult area for poverty alleviation and development. The reasons are, first, that the rural income per capita in poverty-stricken counties is obviously lower than the national level. Furthermore, the disparity is increasing year by year (Figure 2). Among 366 poverty-stricken counties, about 256 are in remote mountain areas; these account for 71% of the total mountain counties in western China. These counties could be put into the following poverty-promoting categories: the desertified area of the south-east edge of the Inner Mongolian plateau, the severe soil-erosion area of the loess plateau, the ecological-degradation area of the Qinling Mountains, the fragile environment area of the karst plateau and hills, the isolated or semi-closed area of mountains and canyon in the Hengduan mountains, and the high-cool desert in the western mountainous areas. In addition to the common characteristics of poverty areas, the western poverty areas have several more: first, agriculture is the backbone of the local economy, but agricultural productivity is very low; second, local economic strength is low and external links are very weak, therefore, it is very difficult to overcome poverty through self-effort; third, the culture and motivation of workers limit improvements in farmers' incomes; fourth, the rural income per capita is low. These are the challenges to poverty alleviation efforts in western China.

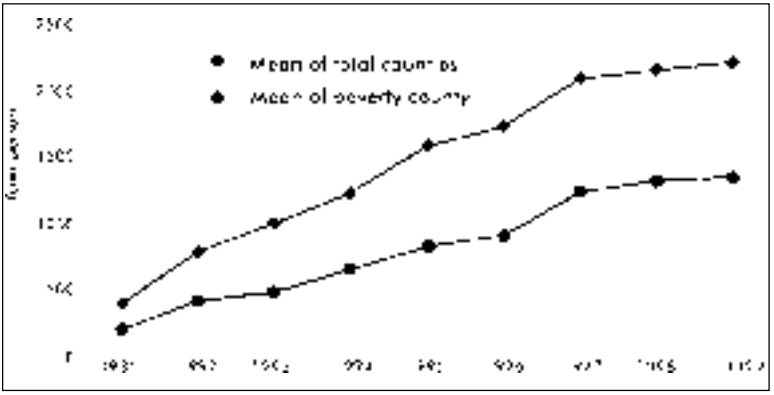

Figure 2: Comparison of farmers' incomes (per person) from 1985 to 1999

Exploitation of natural resources and poverty alleviation in mountainous areas

Rational consideration

a) The status of the natural environment is closely linked to human activities and many bio-physical, geographic factors. It is essential that rural economic development in mountainous areas maintains a good, productive, ecological environment. Such efforts require the economic and technological support and participation of the people. If economic interests are overlooked, the initiative and input for productive environmental management will be weaker.

b) The main environmental problems in poor mountainous areas are desertification, soil erosion, landslides and debris flow, and so on. The reasons behind these mountain hazards include not only bio-physical factors but also irrational human economic activities. Because of the excessive exploitation and destruction of natural resources, some ecosystems have become badly degraded even to irrecoverable levels (Liu Yansui 1999b). Ecological regeneration aims to revive the original situation of nature.

c) Ecological regeneration is the core of sustainable mountain development. Based on this, the links between ecological recovery, resource exploitation, technological progress, and poverty-alleviation efforts should be considered carefully. Specifically, the farmers' interests and capacities must be considered during the implementation of environmental regeneration programmes such as the wild wood protection project, returning farmland to forest, water and soil conservation, and ecological afforestation. Safeguarding the survival and development rights of rural households should be emphasised.

d) The integration of ecological regeneration and poverty alleviation is essential to promote development of the economy, society, and the environment in poverty-stricken areas. In keeping with this, the pilot schemes in western China (e.g., returning farmland to forest or grassland, covering hills with afforestation) should be further amended and implemented. Focus should include small watershed management, the development of ecological agriculture and rural energy, and then improve agricultural production conditions. For areas with serious ecological destruction and seriously deficient living conditions, we should implement migration-development projects in stages to alleviate poverty in different places.

Advantages and models to harness mountainous resources

Proper harnessing of comparative advantages of natural endowment could be an effective way to ensure development and eradication of poverty in mountain areas. Based on the assessment indices of natural resources (e.g., quantity, quality, and location) mountains in China can be classified into 14 mountain systems (Xu Qiaoli and Tan Chuanfeng 1994). In central and western China, there are 10 mountain systems. The advantages of each natural resource and their combinations are listed in Table 2. These resources should be harnessed over time based on the principle of "from easy to difficult, from near to far, and in proper sequence."

Ecological regeneration/development and poverty alleviation models in western China

Different ecological regeneration and poverty alleviation models have been implemented in the country. A brief description of each model is given below.

Wild wood protection projects

The Chinese government began protection of natural forests in September 1998. By 2010, the government plans to invest 170 billion yuan and to decrease felling of trees (10 million m^3 annually). The project to protect natural forest has been implemented in the upper reaches of the Yangtze River and in the middle and upper reaches of the Yellow River, and includes Shaanxi, Gansu, Qinghai, Ningxia, Inner Mongolia, Shanxi, and Henan that lie in the middle and upper reaches of the Yellow River (delimited by Xiaolangdi reservoir area); and Yunnan, Sichuan, Guizhou, Chongqing, Hubei,and Xizang that lie in the upper reaches of the Yangtze River (delimited by the Three Gorges). The main tasks include: (i) preventing the cutting of natural forest, effective and proper management and protection of existent forest, scrub, and young forest by means of individual contraction and mountain closure; and (ii) accelerating the planting of trees or grasses (in deserted areas) as suitable and feasible. Natural forest resources play an important role in maintaining ecological balance, improving environmental quality, and protecting biodiversity. The project to protect natural forests implies that the government purchases environmental services. This is an important way to use trade mechanisms to protect mountain forest resources effectively. However, forbidding cutting of natural forest can also lead to closure of wood factories, reduction of local revenue, and lost jobs. Alternatives for addressing these problems need to be found.

Table 2: Advantages and opportunities for comprehensively harnessing mountainous resources in central and western China

Mountainous areas	Dominant niche resources and potential						Combination niche resources/opportunities
	1	2	3	4	5	6	
Tianshan-Altay Mts.	Mineral resources	Energy sources	Grassland	Arable land	Forest products	Tourism resources	Mineral, energy, agricultural, and pastoral resources
Pamir-Kunlun-Qilian Mts	Mineral resources	Grassland	Energy sources	Arable land	Special products of locality	Tourism resources	Mineral, agricultural, pastoral, and energy resources
Karakorum-Danggula Mts.	Tourism resources	Grassland	Energy sources	Forest products	Arable land	Climatic resources	Tourism, energy, agricultural, and pastoral resources
Gandise-Nyainqntanglha Mts	Arable land	Mineral resources	Energy sources	Grassland	Forest products	Tourism resources	Agricultural and pastoral, mineral, energy resources
Himalayan Mts.	Arable land	Tourism resources	Climatic resources	Energy sources	Forest products	Grassland	Agricultural and pastoral, tourism, and climatic resources
Hengduan Mts	Energy sources	Mineral resources	Special products of locality	Forest products	Climatic resources	Tourism resources	Energy, mineral, and forest resources
Qinling-Daba Mts.	Tourism resources	Mineral resources	Climatic resources	Forest products	Grassland	Arable land	Tourism, mineral, and agricultural and forest resources
Wumeng-Dalou-Wuling	Mineral resources	Energy sources	Climatic resources	Tourist resources	Forest products	Grassland	Agricultural and industrial resources
Dahinggan-Yinshan	Forest products	Mineral resources	Grassland	Arable land	Tourism resources	Climatic resources	Agricultural and raw material resources
Yanshan-Taihang	Energy sources	Mineral resources	Special products of locality	Arable land	Tourism resources	Forest products	Energy, industry, and arable land resources

Returning farmland to forest or grassland projects

Returning farmland to forest or grassland is a long-term project directed to regeneration and integration of ecology and environment in implementing a western development strategy. According to the statistics of the Forestry Bureau of China, from 1999 to the end of 2001, 174 pilot counties have returned about 18.7 million mu (6 mu = 1 acre)of farmland to forest and planted trees in deserted areas on about 16.4 million mu. The subsidies for returning farmland to forest are distributed to households based on relevant regulations to help poor farmers living in mountainous areas.

The thrust and success of the project depend on the following sets of 'combinations': (i) closely co-ordinate and plan to return farmland to forest and promote industrial structure in mountainous areas; (ii) working out a 'win-win' path of poverty alleviation for farmers and promoting the regeneration of the environment; (iii) the co-ordination/combination of returning farmland to forest and development of farmland infrastructure, ensuring availability of essential croplands to farmers and improving their productivity per unit; (iv) the combination of returning farmland to forest and involved 'environmental' migration and poverty-alleviation through hill afforestation; (v) the combination of returning farmland to forest and programmes for rural energy development to reduce use of wood as fuel. The south-western region has gained some successful experiences in developing methane use, firewood-saving kitchen systems, mini-hydropower facilities, solar energy, wind power harnessing, and so on.

Ecological project covering water and soil conservation

The key project of water and soil conservation in the middle and upper reaches of the Yangtze River began in 1989. Through 2001, China invested more than 1.5 billion yuan in this project. The number of counties covered has increased to 191 in 11 provinces of the middle and upper reaches of the Yangtze River; the areas of water and soil conservation reach 5000 sq.km per year, with a total of 680,000 sq.km. In March 2001, the ecological project of water and soil conservation in theYellow River began, involving Qinqhai, Gansu, Ningxia, Inner Mongolia, Shaanxi, Shanxi, Henan, and Shandong. Its specific objectives are: the sandy areas in the Yellow River watershed are a key construction area focusing on a small watershed as the treatment unit, combining water and soil conservation in the watershed. Protecting the environment and reducing mud and sand flow into the Yellow River in order to develop the rural economy, it attempts to tackle the link between returning farmland to forest and grassland and effective protection of vegetation resources. The Yellow River watershed project could serve as an example of ecological regeneration that has special characteristics, extensive effects,and multiple benefits.

Establishment of natural reserve

At present, China has set up 1276 nature reserves of various kinds, covering 123 million sq.km or 12% of China's total territory. Among these, 155 national nature reserves cover 58 million sq.km, about 6% of China's land territory. The number of nature reserves will increase to 1800 by 2010, with 180 national nature reserves covering about 16% of China's land territory. In the course of the 'Tenth-Five Plan', the State Environmental Protection Administration (SEPA) decided to set up 10 national ecological pilot areas, including Qinling Mountains, Heihe River, and so on. In recent years, the governments of Ningxia, Gansu, Yunnan, Sichuan, and Guangxi have established nature reserves, returning farmland to forest and grassland and promoting new types of industries in mountainous areas. New measures to help affected farmers have also been introduced.

Effectiveness of poverty alleviation approaches in western China

The poverty alleviation project has experienced three phases—relieving poverty in general, project-oriented poverty alleviation, and household poverty alleviation. The current new phase of 'development-oriented poverty alleviation' initiated with the China rural poverty alleviation compendium (2001-2010) designed by the State Department went into effect in May 2001. 'The 8.7 Poverty Eradication Programme' implemented since 1994 in western regions has the following components: (i) directing the funds for poverty alleviation programmes to western poverty-stricken areas; (ii) improving the management level of cadres and the capacities of poverty-stricken families by training, and so on.; (iii) organising national authorities and social institutions to implement poverty alleviation initiatives at local levels ; (iv) promoting poverty alleviation co-operation between west and east; (v) encouraging the flow of foreign funds and promoting co-operation with other countries to accelerate poverty alleviation and development. Because the ecology, natural resource conditions, and poverty situation vary from place to place, emphases, modes of operation, and final impacts differ in various parts of the region (Table 3).

Conclusions and suggestions

Conclusions

Since the world conference on environment and development was held in 1992, a large majority of governments and international organisations have begun to pay attention to resource management and poverty alleviation. A series of activities undertaken as a part of 'The International Year of Mountains' in 2002 attempted to shift the sustainable mountain development agenda from the 'investigation-focused stage' to the 'project-

Table 3: Effect on poverty alleviation and resource exploitation in western China

Area	Population of the poor (In 10 thousands)			Net income per farmer (yuan/person)			Resource exploitation
	1993	1999	Rate of poverty reduction	1994	1999	Annual rate of increase	
Shaanxi	500.0	47.4	15.1	547.7	1068.0	19	Industries on conservation of soil and water
Ningxia	139.8	17.9	14.5	429.0	1108.0	31.7	Tourism industries
Gansu	400.0	104.0	12.3	574.6	1057.1	16.8	Construction of Irrigation works, characteristic planting
Qinghai	119.0	32.9	12.0	530.9	1190.2	24.8	Exploitation of mineral resources and water saving irrigation
Xingjiang	176.0	56.0	11.3	635.7	1034.4	12.5	Planting and processing of economic crops
Yunnan	700.0	245.0	10.8	514.0	748.8	9.1	Land renovation and tourism industries
Guizhou	1000.0	287.0	11.9	456.0	1229.5	33.9	Reclamation of terraced fields and unused land
Tibet	48.0	9.7	13.3	435.7	1115.4	31.2	Dealing with the impeding factors for productivity
Sichuan	1000.0	266.0	12.2	426.0	1202.0	36.4	Adjustment of agricultural structure and labour service export

focused stage'. China is a typical mountainous country, with mountainous areas occupying two-thirds of its land territory and providing a direct life-support base for one-fifth of China's population. China has 1540 mountain counties, 601 (73%) of which lie in western China. There are 592 nationally identified poor counties defined by the 8.7 Poverty Eradication Programme; 366 (62%) of these lie in western China. In the process of poverty alleviation, the relationship between development of resources and ecological regeneration and poverty alleviation must be addressed simultaneously. This is more important when promoting projects on protection of natural forest, returning farmland to forest and grassland, the conservation of water and soil, and identifying and developing nature reserves.

The implementation of sustainable mountain development in western China is confronting two challenges: (i) degradation of the ecological environment and (ii) persistent poverty-promoting conditions in mountainous areas. The links and relationship between them should be fully understood and addressed in the process of sustainable development.

Suggestions

Western development is a great trans-century strategy carried out by the Chinese government to reduce regional disparities and achieve prosperity for the whole nation. Its ultimate aims are eradication of poverty and effective environmental management. The western development strategy addresses the above issues. However, a few observations may be made. (i) Western development and poverty alleviation are both strategies to reduce regional disparities and achieve prosperity for the whole nation, but the objective conditions of western mountainous regions are different from those of other regions. Western development emphasises ecological reconstruction, the construction of major infrastructures, the transformation of regional industrial structures, and promoting the use of new science and technology. Besides the poor levels of living, cultural constraints and lack of enterprise are social factors obstructing the efforts at poverty alleviation. (ii) Sustainable development in the west calls for combining the thrusts on ecological regeneration involving returning farmland to forest and grassland, poverty alleviation involving innovative production patterns, changing industrial structures to tap new sources of economic growth—environmentally and economically safe and enriching solutions for poverty. (iii) Giving high importance to the development of labour resources for consolidating the foundation of poverty alleviation. Poverty not only means low income and low consumption, but also the shortage of education and skills. The low quality of skills in the population is the fundamental reason restricting economic development and leading to persistent poverty. Hence, building human resources through education

in science, technology, and functional training should receive increased attention. (iv) Development-oriented poverty alleviation is an effective approach to achieving sustainable poverty alleviation (Zhao Changwen 2000). At present, in mountainous areas of our country, especially in the west, there are many absolute poor living in resource-deficient environments lacking even the basic necessities for survival. While promoting poverty alleviation efforts in different places, focus on ecological migration from some areas would help to restore the optimal balance between natural and human resources.

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Chapter 8

Management of Natural Resources in Bhutan

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Introduction

Bhutan is located in the eastern part of the Hindu Kush-Himalayan region. The country shares many of the vegetation, climatic, and socioeconomic characteristics of its immediate neighbours, especially the south-eastern Tibetan region of China and the Sikkim and Arunachal regions of India.

Geographic isolation, low population density, delayed modernisation, stable and far-sighted leadership, and the Buddhist worldview of nature have all contributed towards preserving a rich and diverse environment. In spite of its small size Bhutan has embarked on a development process which has many unique characteristics unusual for the region. The achievements made over the last few decades are generally seen as very positive, and Bhutan is often cited as a model for proactive conservation initiatives and for innovative approaches to natural resource management (NRM).

The Bhutanese take pride in the fact that their country has proportionally one of the world's highest forest covers and widest biodiversity in flora and fauna. They spare no effort in trying to maintain and protect this treasure. Yet, the current health of the environment—and the policies, strategies, and achievements in preservation and natural resource management—must be seen in the context of the historical, geographical, and social conditions of the country. This is especially important when making comparisons with the development of other countries or in attempts to use models from Bhutan in other countries or regions.

> "..we can draw much satisfaction in our success in the preservation of our natural environment which has become an outstanding example for the rest of the world". (His Majesty the King of Bhutan, in an address summarising the achievements of the past 25 years, Kuensel, June 1999).

This paper gives an overview of NRM in Bhutan. It is divided into 4 parts:

- background information on history, geography, and socioeconomic aspects,
- current status of NRM,
- potentials, opportunities, and problems, and
- experiences in the regional context, historical peculiarities, and what can be learned.

All aspects of NRM are included, but more importance is given to agriculture, livestock, and forestry resources.

Background

Topography

Bhutan is a country consisting only of mountainous terrain. The elevation ranges from about 200m in the south to almost 8000m in the north (Figure 1).

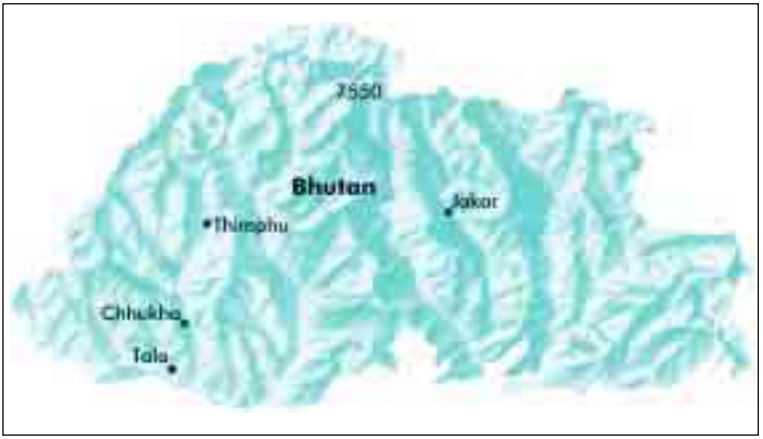

Figure 1: Topography of Bhutan

Climate

The climate is dominated by the monsoon, with a dry winter season and high precipitation from June-September. Influenced by topography, elevation, and rainfall pattern, Bhutan has a wide variety of climatic conditions and consequently a wide diversity in vegetation and farming systems.

History

Isolated by natural and self-imposed barriers, Bhutan experienced little outside influence until the second half of the last century. The isolation demanded that the country was self-sufficient in food, clothing, and shelter to the highest degree possible. By virtue of their resourcefulness and adaptability, Bhutanese households were almost completely self-sufficient. The traditional subsistence economy was based on a feudal system up to the 1950s. Until 1959 the country had no roads, its education system was entirely entrusted to Buddhist monasteries, and trade with the outside world was limited. Despite the isolation, several new world crops—chilli, maize, and potato—spread relatively fast throughout the country and became a very important part of the Bhutanese diet.

The management of natural resources and the resulting socioeconomic conditions were strongly influenced by the pre-Buddhist and Buddhist beliefs and practices. This resulted in a strong respect for nature and conservation. This veneration of nature was common in other countries of Asia, but was sometimes seen as backward or a discouraging impediment to the empire of man over inferior creatures (Aris 1988, Roder 1998). Ancient Tibetan block prints make frequent references to Bhutan's rich environment by calling it 'Realm of Healing Herbs', 'Paradise of the South', and 'Lotus Garden of the Gods—rich in forests of sandalwood and sweet scented herbs'. The influence of past beliefs and values on today's condition of nature was eloquently summarised by a recent statement by His Majesty the King.

"Throughout the centuries the Bhutanese have treasured their natural environment and have looked upon it as the source of all life. This traditional reverence for nature has delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future generations" (MOA 2002).

Socioeconomic conditions

Bhutan has an area of about 46,500 sq.km and a population of 700,000 (CSO 2001). The population is still growing rapidly, at a rate of 2.5% per year. More than 79% of the population live in rural areas and depend on agriculture (CSO 2001). Agriculture is the main economic activity, contributing 32.5% to the GNP (Table 1). Buddhism is the state religion.

The country had no urban centre until the 1960s. In the absence of urban centres there was limited scope for the development of specialised trade. The growth of small industries and manufacturing enterprises is seriously hampered because of that.

Table 1: GDP of Bhutan in 2000

Sectors	Value (US $ million)	Proportion (%)	Growth (%)
Agriculture	29.30	32.5	2.4
Construction	9.85	10.9	19.7
Electricity	9.55	10.6	8
Transport, communication	9.52	10.6	11.8
Community, services	9.09	10.1	3
Manufacturing	8.44	9.4	4
Financing, insurance	7.60	8.4	2.4
Wholesale and retail	5.38	6	4.5
Mining	1.30	1.4	6.4

In the traditional subsistence economy the availability of water to irrigate rice and other crops was the main factor leading to the prosperity of farming households. Besides the influence of Buddhism, it is probably the tremendous economic importance of forest cover that enhanced the evolution of social institutions and beliefs that helped to protect forest cover and the watersheds.

The comprehensive system of laws established by the saint Ngawang Namgyal (1594-1651), the founder and unifier of Bhutan, in the 17th century, also included detailed rules on land ownership and formed the basis for establishing a land registration system. The clear ownership situation (in the form of land documents) was very important for farmers, who risked high labour investments for terracing, making irrigation systems, and protecting the forests.

Current status of natural resource management

Bhutan's farsighted, cautious, and conservation-oriented leadership has succeeded in further enhancing the traditional respect for nature and conservation. Policies and legislation, as well as awareness building through the media and the education system, have raised the level of awareness and appreciation for an intact environment. Matching the limited resources available with the needs of the tremendously variable production systems and climates has and will always be a challenge. Rigorous priority setting and judicious planning are given due importance.

Agriculture (including livestock)

Due to the mountainous topography, only a very small percentage of the land is suitable for agriculture. Crops, in order of importance, are maize,

rice, millet, wheat, buckwheat, potato, mustard, and barley (Table 2). Rice is cultivated on small terraces made on slopes with gradients of up to 80%. Topography and market accessibility favour livestock production, especially in regions with elevations above 2000m. Livestock production is traditionally an integrated part of the Bhutanese farming system.

Table 2: Land-use and livestock statistics

Land use	**Area in '000 ha**
Forest	2904.5
Lowland rice	38.8
Upland agriculture (maize, wheat, barley, buckwheat)	181.7
Shifting cultivation (Tsheri and Pangshing)	88.3
Horticultural plantations (apple, orange, cardamom)	5.8
Natural pastures	155.3
Improved pastures	1.1
Livestock	**Number '000**
Cattle	305.0
Buffalo	1.0
Yak	30.2
Equine (horse, mules, donkeys)	25.8
Goat	16.0
Sheep	31.3

Source: MOA 1997

Soil fertility management

Soil fertility is a major constraint in any mountain environment. High rainfall, steep slopes, and poor parent material are characteristics of the agricultural soils of Bhutan. In spite of these fertility constraints, Bhutanese farmers produce reasonably good crop yields with minimal inputs of inorganic fertilisers. The average input of inorganic fertilisers for 2001 was 3.3, 0.7, and 0.5 kg N, P, and K, respectively, per ha of cultivable land. Obtaining good crop yields with insignificant fertiliser inputs is only possible due to the continuous flow of plant nutrients from the forest to other parts of the production system. To facilitate the flow of nutrients, farmers have devised a range of techniques. The most important of these methods include: (i) use of animals as agents for collection of nutrients and for the acceleration of nutrient flow; (ii) collection of leaves, needles, and decomposed litter from the forest; and (iii) collection of fuel from the forest to be used in a system that enhances nutrient availability through the burning of soil organic matter in a unique grass-fallow system. The use of these systems was only possible because of the high ratio of forest cover to cultivated land.

The methods used are often lauded as ingenious adaptations to the given resources or as excellent examples of organic agriculture. Conversely, critics of these traditional practices see forest grazing and forest litter collection as harmful to the forest ecosystem and the grass fallow system as a waste of labour, land resources, and soil organic matter. Perhaps theses practices were the only options available for food production given the mountainous environment and the geographic isolation.

Permanent grassland

Bhutan has over 400,000 ha of registered grazing land. These areas are known as 'tsadrog'. The area of 'tsadrog' available for large ruminants (cattle and yak) is about 1.6 ha per animal. The natural grassland area estimated from aerial photographs is considerably lower than the area of 'tsadrog'. The most extensive areas of natural grassland are found above the tree line at altitudes of between 4000 and 5000m in the northern districts of Ha, Paro, Thimphu, Gasa, Wangdue, and Bumthang.

Based on the few available estimates, the dry matter yields range from 0.7–3.0 t/ha-1 for temperate grasslands at elevations < 3000m and 0.3–2.5 t/ha-1 for alpine grasslands at elevations > 3000m. A ban on the use of fire for grassland improvement introduced in the Forest Act (Ministry of Trade and Industry 1969) decreased the area and quality of the traditional grassland used by herders. Yet, a substantial increase in dry matter production is possible. Combined effects of white clover introduction and P-application resulted in dry matter yield increases of 813, 317 and 64% for elevations of 2700, 3300, and 4020m respectively. Efforts to increase the availability of winter fodder in both quantity and quality are given priority. Overgrazing is frequently mentioned as the main cause of low and deteriorating grassland and as a threat to the environment. This, however, has yet to be substantiated.

Grassland resources support a wide range of wild animals, of which the takin (*Budorcus taxicolor*), the blue sheep (*Pseudovis nayaur*), the sambar (*Cervus unicolor*), and the musk deer (*Moschus chrysogaster*) are the most important. In recent years some of these species, especially the blue sheep, have increased, supposedly due to a decline in the population of their predators. Another wildlife species which has substantially increased its population is the wild boar.

Forestry

Covering over 70% of the country, forest is the most important ecosystem supporting much of the wide species' diversity of 160 mammals, 770 birds, and 5,400 vascular plant species. Eight major forest types have

been identified in Bhutan. With increasing altitude the vegetation changes from subtropical forest to warm broad-leaved forest, chir pine, cool broad-leaved, evergreen oak, blue pine, spruce, hemlock, fir, juniper/ rhododendron, and dry alpine scrub. The tree limit is usually found at an elevation of from 4000–4500m. Rainfall and exposure are additional factors determining a particular ecosystem. A substantial proportion of the forest area is believed to be of primary forests, thus unique for the region and the world.

The first modern legislation enacted by Bhutan was the 1969 Forest Act, specifically aimed at protecting the forests. It is believed that this act has resulted in an increase in forest cover and forest quality. The recent policies of decentralising executive power to the lowest level possible together with the Social Forestry Act (1996) will make rural households responsible for the management and conservation of forest resources.

Timber is used widely for construction and has been an important commodity exported to India ever since Bhutan became accessible by vehicular road. Harvesting and processing of timber is expected to provide substantial employment opportunities in the near future.

Parks

Recognising the importance of conservation, Bhutan started to establish a system of protected areas in 1966, when the Royal Manas wildlife sanctuary was established. Currently the protected area covers 26.2% of the country, consisting of a natural reserve, four national parks, and four wildlife sanctuaries. The responsibility for this rests with the Forest Department, though the management is strongly dependent on and influenced by outside donors, especially the World Wildlife Fund (WWF).

Hydropower

With roughly 45% of the country above 3000m, the potential for hydropower is enormous. It was estimated that Bhutan has the potential to generate 30,000 MW, which would be sufficient to cover over half of India's present requirement of power.

Today only a little over 1% of the estimated potential (about 400 MW) is harnessed. Yet, even with this small proportion used, the hydroelectricity power sector is already the singlemost important revenue earner for Bhutan. Most of the current power is produced by the Chukha hydropower station, generating 380 MW. Only 80 MW are required in the country, and the remainder is exported to India. Electricity from Bhutan makes an important contribution to the power requirement of India, reaching to places as far

as Ranchi and New Delhi. Revenue from the sale of electricity gave Bhutan a trade surplus of Nu* 448.7 million with India for the first time in 1996. In 2000, the Chhukha Hydro Power Corporation alone contributed US $40.8 million to the national exchequer (Kuensel). Today, the power sector contributes about 45% to the gross revenue generation in the country and accounts for about 11% of the GDP, currently generating a direct income of about US $40 million, or $60 per inhabitant. It is expected that electricity generation will contribute more towards the GDP than agriculture when the Tala hydropower station goes into production in the year 2007. By then, Bhutan would be exporting about 6,400 million units of power annually. Figure 2 shows the existing and projected capacity of hydropower and its export between 1985 and 2010. The revenue from hydropower projects, along with earnings from the other traditional revenue sources, could reach about Nu. 15 billion annually ($500 per capita). Most of the hydropower plants are based on the run-of-the-river system, which takes advantage of the natural drop of the rivers, and the silt load of the water used is a major concern.

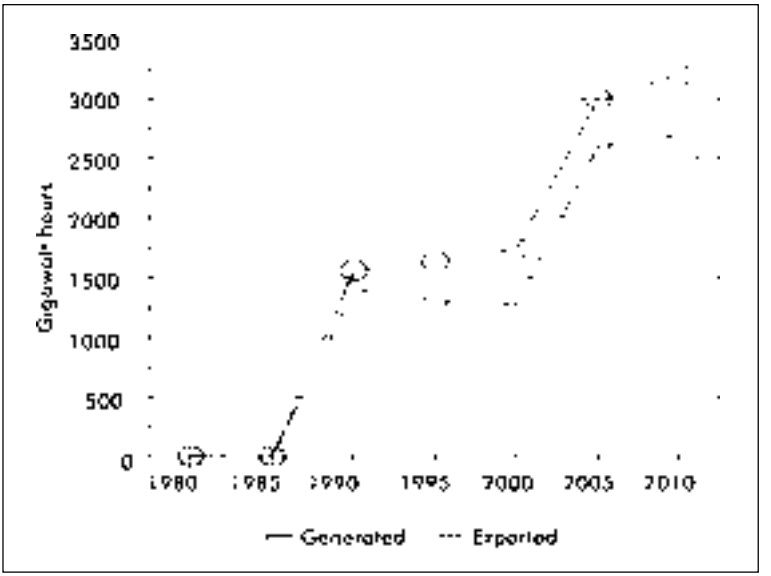

Figure 2: Capacity of hydropower generation and export between 1985–2010

* One US dollar equal to 46 Nu in 2003

All of the large hydropower projects except one have been financed through grants or loans from India and constructed either by India or with Indian technical assistance. India's co-operation in developing Bhutan's hydropower is well beyond the scope of development co-operation, as India desperately needs the energy generated.

Mineral resources

Mineral exploration began only in the early 1960s and information on the mineral resources of Bhutan is still incomplete. So far surveys have shown that there are deposits of coal, limestone, dolomite, talc, marble, gypsum, slate, lead, zinc, copper, tungsten, graphite, iron, mica, phosphate, pyrite, asbestos, and gold. According to an estimate by the United Nations (1991), reserves of dolomite and limestone were about 13.4 billion tonnes and 121.2 million tonnes, respectively.

Currently mineral production includes coal, dolomite, gypsum, limestone, marble, quartzite, sand and gravel, slate, and talc. For exports, some of the minerals are processed into value-added mineral products, such as calcium carbide, cement, and ferrosilicon. Most dolomite, gypsum, and limestone are mined for the manufacture of calcium carbide and cement. Quartzite is mined for production of ferrosilicon and microsilica. Most of the calcium carbide and cement production is exported, mainly to India, and most of the ferrosilicon production is exported, mainly to India and Japan. Most industrial mining of minerals is carried out by privately-owned companies operating in the southern part of the country.

Coal is mined on a small scale in Bhangtar in the eastern district of Samdrup Jongkhar, and exported to neighbouring tea estates of India as well as Bangladesh. A total reserve of 89,000 tonnes of coal has been estimated within 50 metres of the surface.

Institutions, policies, and legislation

Amendments and additions made over the last 5 decades to the intricate and comprehensive system of law codified by Shabdrung Ngawang Namgyal in the 17th century strongly enhanced the legal backing for conservation. Similarly, the conservation-oriented leadership has succeeded in further enhancing the traditional respect for nature and conservation. Policies and legislation, as well as awareness building through the media and the education system, have raised the level of awareness and appreciation for an intact environment.

Today the Ministry of Agriculture is the main government agency responsible for all aspects of development and interventions relating to agriculture,

livestock, and forestry. This ministry is also responsible for management of the parks and protected areas and the generation of an enabling environment for optimal use and conservation of natural resources. Other agencies involved are the National Environment Commission, the Department of Education, the Department of Mining and Industries, and the Department of Power (the latter two under the Ministry of Trade and Industry). The list of rules and regulations developed for forest-related management illustrates the strong commitment of the Government of Bhutan to creating an appropriate environment for the sustainable use and protection of available resources.

Legislation on forest use and management enacted since 1969

- Bhutan Forest Act, 1969
- National Forest Policy, 1974
- Land Act, 1978
- Livestock Act and Bye-laws, 1980
- Forest and Nature Conservation Act, 1995
- Social Forestry Rules, 1996

The Ministry of Agriculture has listed the following policies as the main guiding principles for the 9th FYP:

- to pursue a people-centred development path that would lead to the realisation of their aspirations for a better life through active public participation in the development process,
- to pursue economic development that has prospects for long-term sustainability based on the country's resource situation, comparative advantages, and community-based self-help institutions,
- to pursue balanced and equitable development of the country's renewable natural resources and distribution of benefits accruing from them across society and regions,
- to adopt development strategies that are environmentally friendly and ensure the integrity of the country's fragile ecosystem, and
- to be sensitive and responsive to the rich cultural heritage of the country and ensure its preservation.

Uniqueness, potentials, opportunities, and problems

Bhutan's society is still in the transition from a subsistence, largely agriculture-based economy to a market-driven economy. The achievements made in some areas, especially education, health care, nation building, and nature conservation, are remarkable. Entering the development process

later than all its neighbours, Bhutan could avoid some of the problems and accelerate certain processes, but, in many areas, the country may not be spared the pains that others have experienced.

One of the main limitations posed by the mountainous characteristics is the limited agricultural potential in a situation where almost the entire population depends on agriculture. At the same time the mountainous conditions offer specific potentials in terms of niche production, tourism, and hydropower. It is very important to realise the limitations for general agriculture and to make best use of the potentials in other fields.

Uniqueness, opportunities, potentials

Truly mountainous country

Bhutan is perhaps the only country in Asia that is exclusively mountainous. Therefore, the entire population consists of mountain people. Bhutan therefore cannot speak of mountain regions that have been neglected in comparison to non-mountainous areas. Any commitment to work with the rural population, with farmers or herders, therefore directly translates into working with the mountain population. Bhutan has a low population density with a high population growth rate, high forest cover, low urban population (the largest city has only 30,000 inhabitants), and extremely high aid per capita. As a result of low population density, the landholdings in Bhutan's temperate belt are generally larger than in other Asian countries. There is a high proportion of foreign labour in construction projects and industries. The proportion of foreign labour in the non-agricultural workforce is estimated (by the author) to be higher than 60%.

Healthy environment, biodiversity

Bhutan stands out in the region because of its rich biodiversity and healthy environment. A large percentage of households do not use any inorganic fertiliser or plant protection chemicals. There are many opportunities for marketing speciality products, as organic products or products from a very unique environment. The biodiversity, coupled with the healthy environment, is also a major attraction for donors as well as for tourists.

Niche products

The higher elevations of Bhutan offer opportunities for growing specialised products for the markets in tropical India and Bangladesh. This opportunity has been exploited ever since the country became accessible by road. Apples and potatoes growing at elevations above 2000m generally get very good prices and provide high income to the producers. There are other opportunities in the fields of mandarin, cardamom, off-season fruits

and vegetables, and seed production for vegetables. Being relieved from the necessity of high self-sufficiency, Bhutanese farmers can concentrate more on products that are adapted to the environment.

Rapid transformation

Over the last decade the country has gone through very rapid changes. The time required to go through the same changes has taken Asian or European countries hundreds of years. Very high per capita income is obtained from hydropower export. However, the environment is almost intact and cultural sentiment restricts culling of livestock. The government is small and easy to manage because the size of the population is very small.

Problems

Low population density, scattered settlements, and poor infrastructure

Low population density, poor road communication, and scattered settlements limit the potential for many agricultural commodities. The cost of providing social services is also high, and the access of households to the services available is limited.

Wide range of environments

It is impossible to generate and offer technologies for all existing environments in Bhutan. Similarly, it will not be possible for any single extension person to develop expertise for all conditions and situations.

High production cost in agriculture

The mountainous topography limits the yield potential and increases the labour requirement when compared to more favourable environments. The transition from subsistence agriculture to a market-oriented system is very difficult under conditions where agricultural production is not competitive in the regional or international market and where almost the entire population depends on agriculture. Table 3 clearly indicates that the retail price of goods coming from lowland areas is less than the price of the goods produced locally. In this context future agriculture and livestock production will therefore be largely for consumption within the country. Bhutanese producers will have a competitive advantage for products with a short shelf life or products that cannot be transported over long distances. These would be mostly fresh milk, other dairy products, vegetables, and fruit.

Table 3: Prices of selected products in India and Bhutan

Product	Retail price[1]			Farmers' price	
	Bhutan		India	Bhutan	India
	Bhutan produced	Indian produce			
Milk (kg)	25.0	25.0	12.5	16.0	9.0
Egg (piece)	4.0	2.5	2.0	3.5	1.0
Rice (kg)	18-25	10-20	5.0	15-22	6-15
Wheat (kg)	12.0	11.0	6.0	11.0	4.0

[1] Based on Thimphu prices

Economic realities

Agricultural production in mountainous areas throughout the world has serious economic constraints. Because of the limited possibilities of increasing agricultural production and productivity, there are limited opportunities to improve economic benefits. The disparity between farm incomes and incomes of urban families is increasing fast. Based on the available statistics, in 1980 a family working in agriculture had an income representing 60% of the average family GDP. In 2000 the income was only 40% of the average GDP, and for the year 2020 the income may drop to less than 20% of the average GDP (Figure 3).

Rising expectations can no longer be fulfilled through the very labour-intensive production system. It is therefore not surprising that the new generation has limited interest in agriculture and that rural-to-urban migration has accelerated. Various labour obligations further disadvantage the rural population and are further accelerating this trend. About 60% of

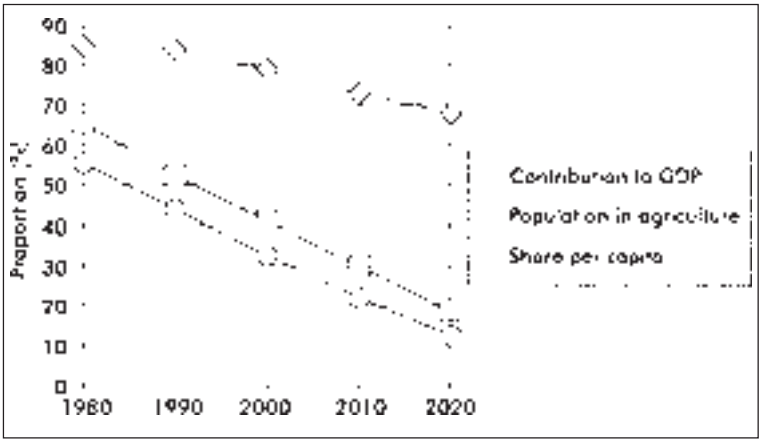

Figure 3: Relative contribution of agriculture to GDP and relative share of the population in agriculture

the male population of Zhemgang district in the 20–45 age group has migrated to other areas (Kuensel 12-10-96). Emerging socioeconomic realities are putting pressure on the farmer to engage in environmentally risky production systems (switching from fallow rotation to permanent cropping systems, using chemicals or fossil fuel energy to replace labour, cultivating marginal land prone to erosion, etc.) or to migrate to urban areas.

Donor culture

Bhutan currently receives yearly assistance to the amount of US $60 per capita, far higher than any other country in Asia. Research, development, and conservation in the natural resource sector are strongly influenced by a variety of different donors. Outside expertise and resources may make an important contribution to agricultural development, but expatriate advisors often lack sufficient insight into local realities (cultural, biological, and economic), and their advice is strongly influenced by problems and priorities in their own countries.

Parks and wildlife

Largely influenced by outside interest, Bhutan has introduced regulations protecting wildlife. This may have resulted in population changes and certainly has affected the extent of wildlife problems experienced by farmers. In many regions farmers cite wildlife damage as the singlemost important constraint to agricultural production. The most important species are wild boar, bears, and monkeys. The exponential growth of the area under national parks has further aggravated the problem.

Lessons from Bhutan's experiences

Bhutan as a model for environmental conservation

Perhaps the most important statement to be made is that Bhutan is not a Shangri-La of conservation and development. As mentioned earlier, today's conditions are largely the result of the past. A combination of historical factors "delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future generations". Bhutan clearly has no secret recipe. If we want to learn from Bhutan we may therefore need to learn mostly from its past approach to NRM.

When comparing development in Bhutan with other countries in the region, it is important to be aware of factors unique to Bhutan. These have been elaborated upon earlier as low population density, high forest cover, larger landholdings in the temperate belt, relatively late initiation of development

activities (20th century), almost intact environment, relatively high income per capita, high proportion of foreign labour in construction projects and industries, and relatively rapid changes in the country during the last four decades.

Lessons learned which may be of regional interest

Mountains as a source of strength

Bhutan's unique culture and its independent nationhood were only possible thanks to the mountains. Bhutan's existence and its relatively good economic performance, therefore, is a strong testimony that mountains give economic and cultural strength. During this workshop we may be talking at length of the marginality of mountain environments. Bhutan's recent economic development contradicts such theories. Being fully mountainous, Bhutan had a higher GDP growth than most other South Asian countries, although some of them have rather insignificant proportions of mountainous terrain (Table 4). If we look at agriculture only, then we may talk of a marginal system. If, however, we take a holistic view of the mountain environment (as the country of Bhutan may represent), then we may get a very different picture. Poverty in some mountain regions may be due to the non-mountain population of a country getting the main benefits from the mountain regions (benefits from tourism, hydropower, mining, timber, etc.). In Bhutan we do have similar examples of the urban middle class benefiting more from tourism than the rural population.

Table 4: Some socioeconomic indicators of development in selected countries (figures for 2000)

	Bhutan	Nepal	China	India	Switzer-land
Forest %	64.2	26.5	16.7	19.4	29.0
GNI per capita (US $)	590	240	840	450	38140
GDP growth (%)	7.0	6.5	7.9	3.9	3.0
GDP agriculture (%)	33.2	40.3	15.9	24.9	1.7
Population density (person/km2)	17	156	135	303	174
Population growth (%)	2.9	2.4	0.9	1.8	0.6
Urban population (%)	7.1	11.8	35.8	27.7	67.4
Aid per capita (US $)	66.2	16.9	1.4	1.7	-
Telephones (per 1000)	19.6	11.9	177.6	35.5	1370
Internet (per 1000)	1.9	2.2	16.9	5.0	291.7
Cereal yield (t/ha, FAO)	1.84	2.09	4.74	2.34	6.40
Bovine species used (no)	5	4	4	5	1

Source: World Bank 2002

The mountain population is not backward

Consider that in 1960 Bhutan was a feudal society without any schools or health system. The advances made over the last four decades in health, education, and governance are faster than in most other Asian countries. Again this shows that mountain people can adopt and adapt to changes very fast and can advance as much as any other population.

Importance of agriculture

Although the relative contribution of agriculture to the total GDP is declining fast, agriculture will remain the most important source of employment for several decades. The government has recognised this reality and gives high importance to agriculture. This is largely done in an approach where all the needs of the rural population are addressed. In the future it may be necessary to find practical systems by which the wealth generated from the mountain environment through hydropower and tourism can be shared with the rural population.

Growing disparity

The disparity between the urban and rural populations is growing fast. Every effort has to be made to address this problem, otherwise it does not serve any purpose to continue discussing problems which are inherent to mountain environments, especially the marginality for agriculture and difficult communications. But there are many issues that can be addressed. Examples for Bhutan include access to quality education and health care, labour obligations by the rural population, centralised bureaucracy (for a farmer many bureaucratic steps (obtaining trade licenses, renewing drivers' licenses, processing a bank loan, etc.) are unnecessarily complicated and time consuming.

Conservation

The efforts of previous generations to preserve natural resources are paying high dividends.

Integrated approach by the Ministry of Agriculture

The Ministry of Agriculture was completely reorganised from1993–96. Research and extension activities previously carried out under separate livestock, agriculture, and forestry departments were integrated into one department. Sharing facilities and working in integrated teams appeared to offer tremendous advantages. After using the new model for seven years, enthusiasm has faded, but the majority of people involved still consider it a good system, especially considering the complex production systems in the mountains. While the system may not be suitable for national

application in a larger country, it could still be an interesting model for mountainous regions with autonomous administrative units.

Control over resources

In the initial phase of development the control and management of forest and grassland resources were centralised, but it was soon realised that sustained conservation and optimal use was only possible if the control, management, and the economic benefits were given back to the rural population.

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Chapter 9

Highland – Lowland Linkages in the Globalised World

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Previewing the issues

Primarily because of their biophysical features and their operational imperatives, highlands (mountains and hills) and lowlands (plains) are endowed quite differently regarding resources and production opportunities. This forms the basis for complementary economic links between the two, manifested through exchange of resources, products, and services. However, the actual materialisation of such exchange-based complementarities depends on the means and mechanisms characterising exchange processes between highlands and lowlands. The mechanisms and processes in turn are influenced by the relative differences in the biophysical as well as socioeconomic constraints and capacities of the two entities in terms of generation and exchange of products and services.

This paper discusses these aspects by first elaborating on circumstances in mountain areas which obstruct production, generation of surplus, and trading—i.e., harnessing and equitably exchanging their products, services, and resources with lowlands. Here we also allude to factors that weaken the position of highlands as trading partners, leading to unequal highland–lowland economic links. Possible approaches and emerging trends towards changing these links are also commented upon. The latter also includes altering the factors (e.g., limited accessibility and lack of local capacities and commercialisation) responsible for the weaker positions of highlands as producers and traders of products and services in which they should have comparative advantages. Another important issue is the impact of highland–lowland links on poverty in mountain areas both at macro and micro levels. The issues of unequal highland–lowland links and their poverty related implications are elaborated upon by linking them to the nature/types of flows—products, services, and resources (including human resources).

The discussion is conceived in a dynamic context, where not only changes in highland–lowland flows and the factors behind them are indicated, but

the whole situation is reassessed in terms of economic globalisation. The rising concern for compensating mountain areas and communities for their environmental services provided as global public goods to the lowlands constitutes an important part of the discussion. Finally, the paper attempts to indicate methodological steps and approaches to generate evidence on different aspects to promote complementarities between highland–lowland economic links.

The roots and rationale of links

Economic links between two systems or regions are manifested by the mutual flow of resources (including human resources), products, and services under an exchange system as mediated by market forces, state interventions, or the interactions evolved by people (e.g., barter systems). The type and extent of these flows are rooted in the differences between highlands and lowlands in terms of basic resource endowments, ways and capacities to harness them, and the patterns of exchanging them with each other.

Table 1 sketches the basic elements of a framework to understand the nature and type of these links. Column A indicates the broad potential steps or stages in the process and relates them to specific conditions of mountain areas (columns 2 to 5) to see how the latter obstruct or facilitate the linking processes at different stages.

Table 1: Factors Affecting Highland–Lowland Links

A. Factors/Conditions Facilitating Effective (Complementary) Highland–Lowland Economic Links	B. Specific Features of Mountain Areas Favourable (+) or Unfavourable (-) to (1)				
	Limited Accessibility (Difficult & Costly Logistics)1	Fragility (Obstruction to Intensification for High Productivity)2	Marginality (Low Resource Productivity, Low Incomes)3	Diversity (Source of Multiple Productive Options)4	Niche (Unique Resources with High Economic Gains\Potential)5
(a) Natural resource endowments/ activities/products with potential comparative advantages				(+)	(+)
(b) Capacities/facilities to harness – including processing etc – to generate tradable surplus for reinvestment/ development etc.	(-)	(-)	(-)		
(c) Capacities/facilities for equitable external exchange/ trading of the products/ resources/services	(-)		(-)		

Table 1 can offer useful directions towards understanding several aspects of the highland situation covered by this paper. It can help us understand the scope for potentially complementary highland–lowland economic relations; how this complementarity could be operationalised or disregarded; how mountain conditions promote poverty processes and unequal highland–lowland economic links; and possible ways to address these problems. First, let us focus on the poverty aspects.

1. **Limited accessibility**, isolation, semi-closed situation created by slope, terrain conditions, and permanent underinvestment in addressing the problem. This adds to the cost of logistics and other support systems to harness production opportunities and their competitiveness and equitable trade.
2. **Fragility**, a product of slope, edaphic factors, etc. Not only prevents intensification of land resource use for high productivity but obstructs infrastructural development to improve accessibility to facilitate mobility and trade at lower/competitive costs.
3. **Marginality** of production caused by factors listed under above (1 and 2) and socioeconomic, geopolitical marginality of mountain habitats again caused by e.g., poverty, vulnerability, limited economic options, or domination niche.
4. **Diversities** of the resource base as a source of spatially and temporally different positive and high payoff production opportunities, if properly harnessed and traded.
5. Major known **niche** resources (hydropower, timber,[non-timber forest products] NTFPs, minerals, eco-tourism, etc.) with a comparative advantage in the highlands.

Poverty implications of mountain specificities

Viewed in the poverty context, the factors described by Table 1 also explain the processes contributing to persistent poverty in most of the highlands (except easily accessible valley areas). The conditions historically associated with enhanced economic performance in most parts of the world—namely resource use intensification, productivity gains from access to and use of high productivity input and investments, efficient infrastructural support, and external links for profitable exchange of the surpluses—are not readily satisfied in mountain areas due to the fragility, inaccessibility, marginality, and so on listed in Table 1. Thus mountains have situations that not only obstruct favourable highland–lowland economic links, but also tend to perpetuate poverty in most parts of these regions (Jodha 2000).

Efforts to enhance productivity through intensification, narrow specialisation, and overexploitation of marginal, fragile, and heterogeneous

resources (as tried in many HKH areas) accentuate the cycle of resource degradation–reduced productivity (or increased scarcity), compelling further intensification, leading to still more resource degradation and poverty. Efforts to exploit niche resources and trade their products that disregard the problems of limited access and missing local capacity further accentuate the inequities of highland–lowland exchanges, as they reduce the bargaining capacity of mountain communities in interacting with lowland mainstream agencies. Broadly speaking, inequality of highland – lowland economic links and persistence of poverty in mountain areas are rooted in mountain specificities. The lack of serious and appropriate efforts towards raising resource productivity in fragile mountains, sustainable harnessing and regenerating of niche resources, and ensuring equitable trade promotion based on mountain perspectives (i.e., explicit incorporation of imperatives of mountain specificities in interventions) are also rooted in socioeconomic and geopolitical marginality of mountain communities and their invisibility and voicelessness vis-à-vis lowland mainstream systems.

Past patterns of economic flows

In the context of complementary highland–lowland economic links, Table 1 indicates the potential where lowland flows or support can fill the gaps indicated by negative (-) conditions faced by the highlands and the latter can generate flows based on positive (+) attributes that can help the lowlands. How far this projected ideal scenario of complementarity materialises depends on several factors. To understand and analyse them, one should look at the past and current patterns of mutual resource flows.

Despite their constraining features, highlands in the past have had flourishing civilisations and stable economies with low population pressure and need-based, niche-based external links (e.g., the trade histories linked to the Silk Route and caravan trade). However, in due course, the external world transformed rapidly in terms of accessibility and means of communication, production systems and technologies, productivity and efficiency, specialisation and logistic support systems, and finally trading culture and links, which transformed them into dominant entities vis-à-vis the highlands (Kreutzmann 2000). Highlands became marginal entities, and this transformation over time promoted unfavourable terms of trade for them. Imbalances between the highlands and lowlands became a pattern.

As indicated in Table 2, some efforts initiated by governments have attempted to promote productivity of fragile and marginal areas; promote infrastructure to address inaccessibility; and to promote raising human capacities through social sector services, etc. Similarly, niche opportunities to export niche products, resources, etc. have been promoted.

However, while promoting productivity in fragile, marginal, diverse areas, lowland initiatives (i.e., support and flows) are governed by the lowland's perspective of highlands rather than their strict relevance and appropriateness to highland situations. This includes infrastructural development, which is often attempted with little attention to the side effects on fragile eco-systems, causing both economic and environmental damage, as indicated by major roads linking mining areas or hydropower projects in HKH countries.

The harnessing and trading of niche resources (timber, water, hydropower, minerals, and so on) have been promoted and facilitated by lowland policy-makers, but largely on the pattern of hinterland–metropolis links. This implies exploitation and trading of primary/raw products rather than processing them into value-added products. Most infrastructural development has been tied to activities serving primarily lowland needs. Local capacity-building and involvement in the above-mentioned major niche exploitation are quite minimal. Some small-scale niche opportunities (e.g., fruit, flowers, herbs, and so on that are not easily handled by external agencies) are an exception to this.

For a variety of economic, political, and technological reasons, the lowlands have helped to harness highland opportunities that mainly helped the lowlands. The negative implications of this were further aggravated due to the unequal positions of highlanders and lowlanders as trading partners and consequent unfavourable terms of trade for highlanders. Several export flows (both traded ones and non-traded ones) from the mountains are neither appropriately priced nor fully compensated for (Banskota and Sharma 1999).

Different categories of flows are summarised in Table 2. Table 2 presents a generic picture. Within the mountains there are cases with very complementary trade links with the plains. Similarly, several developed areas and better accessed valleys within mountain areas represent the situation of the lowlands when compared to areas with high altitude, steep slopes, and difficult terrain.

Economic flows and framework to understand them

As an initial step towards understanding, documenting, and quantifying highland – lowland economic linkages, we can group the flow of items into the following categories (Jodha 1997).

Table 2: cont….

5. Repercussions of globalisation	(-) Gains of special products (fruit etc.) eroded by trade liberalisation (+)Identification of new options as demanded by export markets (-) Over-extraction of niche resources/products with increased demands/ external markets (+)Rising voices for fair terms of trade	(-)'Corporatisation' of natural resources with marginalisation of state; disregard of customary rights ** (+)Increased private sector investment possibilities (+)Rising concern and advocacy of community interests; compensation for environmental services	(-) "Exclusion" of locals from transformation process due to lack of skills/ capacities/ investment resources (+)Advocacy for equipping mtn. communities for changes	(-) Decline of social transfers, support systems, social security net broken, increased differentiation in rural society (+)Progressive areas responding to new challenges (+)Emerging alliances between community & private firms
6. Possible approaches to address the above problems	Alter terms of trade by realistic pricing; local processing (value adding); improving local skill levels and infrastructures; and suitable sharing or compensatory mechanisms; supplement natural niche by manmade niche	Evolve/implement appropriate compensatory mechanisms for both 'managed', and 'semi-managed' resource flows; especially in globalisation context	Build infrastructure, enhance skills, and encourage local high wage employment, enterprises to reduce migration; impart higher skills for higher earnings	Appropriate and enhanced investment in mtns. to raise their productivity and comparative advantage; local participation in development decisions; evolve special provisions for mtn. areas in WTO rules

Key: *The table presents a generic picture of the situation. Within mountain regions some areas, especially better accessible valleys, which represent situations comparable to the lowlands (plains)
a. Flow from highlands; b. Flow from lowlands.
(+) Positive links/developments for highlands; (-) Negative links/developments for highlands
** The term 'corporatisation' is used here in the sense of the unprecedented primacy given to market forces in the context of decisions regarding investment in natural resources and their use. It is used in the sense of 'capture' by multinational corporations of states and the willingness of those states to carry out pro-market policies to promote direct foreign investment.

Traded commodity and service flows

This includes the following: (a) special mountain products such as herbs, flowers, seeds, fruit, and vegetables in which the mountains have a natural comparative advantage. Initially a part of petty trading, these items are increasingly becoming a major component of trade. To the above (a) one can add (b), timber and other forest products. Historically and currently these items represent a major under-priced export from the highlands to the lowlands. The next item (c) includes hydropower, which is a new item on the list but often produced and exported without direct involvement of or benefit to highland communities. Finally (d), tourism, is a major high-value service provided by the highlands, again with very marginal involvement of highland communities in managing the service or securing gains from it.

The dominant features of these activities and product flows include: export of unprocessed products (hence little local value additions); under-pricing and unfavourable terms of trade for the highlands; and activities having (uncompensated) backlash effects on mountain areas and communities which exceed the gains to them.

Possible approaches to alter the above features call for deliberate efforts and mechanisms to change prevailing unfavourable terms of trade; realistic resource/product pricing; encouragement to local processing; improving local skills and infrastructure to facilitate the above; and suitable sharing and compensating mechanisms to reduce the adverse impacts of trade on the highlands.

'Managed' and 'semi-managed' natural resource flows

Because of the very nature of landscapes (particularly verticality and slope), the flow of natural resources such as water and nutrients from the highlands to downstream lowlands has been as eternal as the mountains. However, these natural flows became part of managed flows through human efforts to control and regulate the flows for planned downstream use (e.g., water for irrigation, hydropower, and so on).

Additionally, there are semi-managed natural resource flows from the mountains. They include invisible environmental services or gains in terms of groundwater discharge, nutrients, biodiversity elements, silt-free water flows, physical stability of downstream watersheds, and so on which are directly related to conservation and protection of highland watersheds by mountain people. For want of proper economic assessment and lack of pricing, these services involving cost and efforts for the highlands remain uncompensated. Their gains downstream are never shared with the

highlands. In many cases, as in parts of India, downstream farmers do not pay for water for irrigation and electricity generated in the highlands.

The unequal impacts of these natural resource flows would further increase once one considers the backlash effects of managed natural resource flows (through physical structures, and so on) on the economy, sustenance system, and productive habitats of highland communities. Impacts of big dams on local communities are one often-highlighted case.

Another side effect of the specific orientation of lowland-biased management of natural resource flows is the disregard of multiple, locally-beneficial micro-niches, be they small-scale community irrigation systems or micro-hydropower production systems in the hills.

Approaches to altering the situation should focus on multiple fronts. They may include use of environmental/natural resource costing methods to evolve appropriate compensatory (gains sharing) mechanisms for both managed and semi-managed natural resource flows from the highlands to the lowlands and emphasis on small-scale, location-specific works with greater local benefits, little backlash, and improved local linkages and spread effects.

Human resource flows

If one ignores the lowland migrants to the highlands (as in the Chittagong Hill Tracts, or rich people from the plains acquiring summer homes in the hills) and lowland (Bangladesh) salaried workers managing public interventions in the mountains, the seasonal or periodical migration of male adults from mountain areas to the plains is a well-known form of human resource flow. Depending on how one looks at it, its impacts for the highlands are mixed. Besides creating labour scarcity and increasing mountain women's work burden, migration also generates a more regular flow of income for mountain families.

To address the negative aspects of human migration (i.e., to minimise its magnitude and increase its gains through greater earnings for migrants), one needs an integrated approach. First, it requires an alteration of circumstances which force out-migration by creating local employment opportunities through infrastructural development and local resource-based micro-enterprises, and improving local skills and capabilities to benefit from those changes. Improved skills can increase earnings during migration, as skilled migrants can command higher wages.

Social transfers and public sector investment flows

Unlike product and resource flows, the economic flows discussed below are the only major flows that move from the lowlands to the highlands. They consist of: (i) social transfers—e.g., cash and kind supplies like welfare, relief, and subsidies for production and development and (ii) public sector investment and technology flows for development projects.

The outstanding feature of these welfare-cum-development resource flows is that, despite their increase (through foreign aid and national resources), these flows continue to be disproportionately lower compared to both the economic flows from the mountains to the plains and the needs of mountain areas. Consequently, the highlands, besides being net donors to lowland economies, continue to suffer from a state of chronic under-investment with its consequential mounting poverty and underdevelopment.

An equally important feature of public sector investment flows (largely confined to infrastructural developments) is their focus on the areas and locations from which niche opportunities (e.g., irrigation and hydropower, minerals, tourism, forest and horticultural products) are harnessed to meet the lowlands' needs and priorities. Even when development interventions in the highlands are free of a lowlands bias, they lack the mountain perspective, implying a lack of understanding and incorporation of the imperatives of mountain-specific conditions (e.g., fragility, diversity, and so on) in the design and mechanisms of development projects. This reduces the relevance and effectiveness of investment flows to the highlands.

Changes in the above situation require giving a higher priority to highland needs in development investment and designing development strategies with a mountain perspective. A gradual elimination of under-investment should be another priority.

The above discussion largely narrates the dominant situation of highland flows to the lowlands in the past. In the recent period a number of changes have been emerging, as discussed below.

Recent changes

The patterns of highland flows characterising highland–lowland links and their underlying factors, which also promote poverty in most mountain areas, are in the process of change. Accordingly, right from a small country like Nepal to a large country like China, mountain specificities are being slowly addressed. The crucial change is the effort to improve accessibility and promote local capacities in terms of both human resource development (HRD) and promotion of commercialisation and high-value, tradable products.

These changes are particularly important as steps towards linking highlands to lowlands and harnessing the benefits of exchange and trade. To fit well with changes induced by globalisation, new niche products and their processing and marketing, including collaboration with multinational corporations (MNCs), is promoted. China exceeds in these efforts in comparison to other HKH countries. The processes and implications of these trends are discussed in the following section on the repercussions of globalisation for mountain areas, particularly in the context of highland – lowland links and poverty in mountain areas.

Economic globalisation: repercussions

Economic globalisation, with primacy given to market-friendly and market-driven processes, provisions, and practices, is spreading to all countries and regions. Although promoted as a means of global growth and prosperity, the process also carries risks for the participants. Participants ill equipped and unprepared for change are likely to encounter more risks and limited gains in the process. Mountain regions like the Himalayas and their communities, due to both their specific biophysical circumstances and historical processes (e.g., chronic under-investment and negative side effects of external interventions) affecting them, fall in this category. The negative side effects of external links may be further accentuated during the globalisation era, due to the well-known tendency of market processes to ignore negative externalities and non-profit concerns, while using and integrating mountain areas into wider economic systems. Besides, due to the rapid erosion of traditional coping strategies of mountain communities in the face of market-driven technological and institutional changes, their inability to participate effectively in the change process, and the reduced economic role and capacity of the state (following market-friendly economic reforms) to extend welfare and development support to them, the communities are likely to be exposed to greater risks and vulnerabilities.

However, at the same time, one need not look at globalisation-led changes in terms of doom and gloom. The process may also generate positive opportunities through harnessing niche resources and products of mountain areas in demand globally and facilitating the flow of resources and technologies to overcome biophysically determined constraints to development in mountain areas. However, realisation of such gains is linked to usable information regarding possible opportunities, enabling facilities, and local capacities to use them.

The above aspects have been discussed in detail elsewhere (Jodha 2002). Drawing from the same source, and supplementing the same by more

exploratory field visits/observations, we discussed the changes with reference to the highland–lowland flows outlined in Table 2.

Emerging changes in trade flows

Regarding negative impacts of globalisation, micro-niche products such as fruit, off-season vegetables, flowers, and so on have been exposed to external competition following trade liberalisation. The comparative advantages of mountain areas endowed by nature in these products are gradually eroding, unless they can be strengthened by man-made support/ niche opportunities. The declining gains of fruit like apples, off-season vegetables, and flowers in the Indian Himalayas illustrate this. An important risk emerging from globalisation relates to over-extraction of major niche resources such as timber, minerals, hydropower, and herbs due to increased global demand for these resources and the increased role of markets in decisions about resource exploitation.

On the positive side, globalisation has opened new world markets for unique herbs, mushrooms, other organic products, and NTFPs (non-timber forest products). Enhancing and harvesting these products call for improvements in the capacity of the producers and in state support. In some cases multinational firms have started collaborating in promoting new opportunities, as for example, Dabur, in the case of medicinal herbs in Nepal and India; and Dutch firms helping in floriculture development in the Kunming area of China. Direct or indirect participation of multinational agencies in tourism development in different HKH countries is also taking place.

The involvement of multinational firms in building infrastructure or harnessing major niche resources (water, hydropower, etc.) is also increasing in countries such as Nepal and Pakistan.

Promotion of information technologies and needed infrastructure, again supported by the private sector, is an important development that helps link remote areas with mainstream economies. Though as yet quite limited and faced with problems in terms of logistics, initiatives based on information technology (IT) represent unique opportunities to transform mountain areas, with positive impacts on poverty and fair terms of trade, while linking with the external world.

Managed and semi-managed resource flows

Related to the flows of major niche resources such as timber, minerals, herbs, hydropower, etc., the changes affecting over-extraction of managed and semi-managed resources are another potentially negative repercussion

of globalisation. However, due to increasing awareness of the issues, recognition of the key role of mountain ecosystems in the stability of downstream environments and economies, and mountains being the source of multiple public goods (e.g., biodiversity, freshwater, nutrient flows, and so on), increasing calls for compensating mountain areas and communities are being heard.

The methods to evaluate these resources and services have already been developed by environmental economists. In several developing countries, such as The Philippines, Costa Rica, and Ecuador, lowland agencies have already evolved and implemented mechanisms to compensate highlanders for clean water and other resources available to lowlanders (Koch-Weser 2002).

However, in the HKH region there is no known ready example of this. Although in some cases royalties are paid to the states or counties where highland resources originate, such mountain transfers to the state/county level rarely directly reach the communities which, through their conservation practices, are responsible for generation of environmental resource/service flows.

Social transfer and development resource flows

Apart from royalties, in countries like China and India mountain states and counties get grants from central governments to support welfare and development activities in their respective areas. At times, subsidies or grants are considered as some form of charity, although, in most cases, such resource transfers would fall far short of the resource/service flows from the highlands to the lowlands.

In the context of globalisation and its associated changes, such as macro-economic or structural reforms, the subsidies and free resource transfers (especially at community levels) are likely to disappear due to conditions imposed by the donors. Their impact on the poor will be commented upon shortly.

The specific situation of mountain areas and the mountain areas' contributions in terms of environmental services and supply of public goods, the (World Trade Organisation) WTO provisions on discontinuation of subsidies, and many other factors need to be considered. To this one should add the strong case for compensating the environmental services offered by the highlands. If compensatory provisions are adopted, 'charity oriented' resource flows from lowlands to highlands will not be required. However, advocacy on these issues needs more solid information and analysis to make a strong case.

Human resource flows

The pattern of migration from highlands to lowlands has changed dramatically in recent years. Seasonal and short-term out-migration of unskilled labour is gradually changing into migration involving longer periods, longer distances, and semi-skilled to skilled migrants with higher earnings. The highland workers from Nepal, Pakistan, and other countries migrating to Middle Eastern or South-East Asian countries are one example.

A related aspect of this change is increased remittances to families and countries in foreign exchange. The returning migrants are richer both in money and new skills than they were at the inception and, rather than again living on their fragile or marginal land holdings, they tend either to upgrade the land by irrigation or planting high-value crops, or to move to urban areas and start small enterprises. The latter is a part of slowly emerging commercialisation. Their next generation is better educated and skilled. Field observations in Nepal, India, and Pakistan all support this view.

Impact on poverty

Several issues relating to the implications of changes led by globalisation for rural poverty have already been discussed. The important ones are listed below.

- Loss of nature-endowed comparative advantages to specific products such as horticulture, flowers, off-season vegetables, and so on (due to trade liberalisation as a result of globalisation) directly influence highland farmers.
- Reduced role of the state and unprecedented primacy of markets in economic affairs, leading to decline of social transfers through development subsidy, welfare, and so on have harmed the highland poor most (Jodha 2002).
- Limited skills and capabilities of rural communities to participate in and share the positive gains of globalisation have led to an exclusion process.
- Poor people's other sources and sustenance strategies are also adversely affected by different aspects of globalisation.
- By ignoring customary rights and other arrangements, the governments in different countries—China, India, and Pakistan, in particular—have encouraged private corporations to acquire community and private lands in different areas in the name of development and getting foreign direct investment (FDI).

- Due to market-driven technologies and preferred farm products, the traditional organically integrated farming systems represented by farming–forestry–livestock linkages are gradually disintegrating. The promotion of intensification of agriculture in preference to integrated diversified farming systems is one example of this.
- The socioeconomic changes accentuated by globalisation (such as increased economic stratification; the village rich forming close alliances with distant trading firms and their agents rather than looking at community concerns; the decline of collective risk sharing, and so on have also reduced the extent and effectiveness of traditional institutional measures to help communities during crises.
- In cases in which community forestry is making good progress, governments are playing with the idea of 'corporatisation' (see note to Table 2) of these natural resources and thereby exclude the communities from management and use of local natural resources.

Against the above negative repercussions, at least in the more readily accessible and progressive villages, farmers are able to identify new niche opportunities and harness them by collaborating with the market firms. In some cases, educated rural youth have formed groups to harness such opportunities without involving middlemen. A number of such positive cases was observed in four countries of the HKH during the exploratory study on globalisation and mountains (Jodha 2002).

MAJOR ISSUES AND POLICY IMPLICATIONS

Issue 1

There are common roots of mountain area poverty and unequal highland–lowland linkages, represented by mountain specificities such as fragility, limited accessibility, marginality, and so on.

Policy implications

Policies must address the manifestation and imperatives of mountain features such as:

- fragility by evolving options involving low-intensity land uses (e.g., high-value herbs; zero-tillage systems, and 'green' roads suited to fragile slopes); and
- the need to upgrade marginal resources through irrigation, access, and conservation technologies and socioeconomic demarginalisation by local capacity building; decentralisation, and participatory interventions.

Issue 2

Analysis of resource, product, and service flows can help to understand highland–lowland linkages in order to evolve approaches to enhance their equity and complementarity.

Policy Implications

- Emphasise enhanced research efforts to refine and operationalise the framework, including methodologies to deal with specific product flows and contexts.
- The framework, supported by data and analysis, can help in advocacy for appropriate pricing of resource flows and compensation for environmental services.
- The immediate steps to influence the extent and equity of the above flows should include building infrastructure and local capacity (in terms of growth of enterprise and commercialisation).

Issue 3

Economic globalisation is emerging as a major influence on both mountain poverty and on highland–lowland linkages. This carries both risks and opportunities manifested by negative and positive impacts on all the resource-product flows outlined in this paper.

Policy implications

Broadly speaking, the flow-based analysis of repercussions of globalisation can help to identify response strategies to minimise the risks and enhance or harness opportunities associated with globalisation. This needs increased situation/flow-specific research.

Issue 4

Specific problems emerging in the context of globalisation and related developments include:

- reduced comparative advantage to some mountain products due to liberalised trade policies;
- reduced state support to the poor and breakdown of the social safety net;
- declining local access to local natural resources; and
- persistent and accentuated natural resource extraction due to rising global demands.

Policy implications

These and other related issues should be addressed through:

- greater attention to supplementing natural niche by man-made niche (facilities) in mountain areas;
- involvement of local communities in decisions affecting them; and
- search for and promoting 'exception' windows in WTO provisions to protect mountain natural resources, to compensate for their environmental services, and to provide special provisions to help the mountain poor.

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Chapter 10

The Development and Governance of Human Resources in China

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Introduction

Human resources refer to the sum total of labour capacity (intelligence, stamina, technique, and psychology) latent in a population, including the quantity and quality of population. There are two basic dimensions of a population's quantity: low birth rates that normally lead to a shortage of human resources, and high birth rates that normally result in enhanced pressure on a nation's resources and supplies. The quality (degree to which a population has useful skills) of a population can help to compensate for the negative consequences of its quantity dimensions. Economic and social development mainly depend on the quality of human resources.

Humans, as the successors and possessors of knowledge and technologies, represent a dynamic resource for national economic and social development. Human resources are dominant in economic activity, controlling use of other resources. They are the key factor in national economic development. It is important to develop and govern human resources and use them for economic progress and to eliminate poverty.

China has a huge population but the skills and educational levels of the population in general are on the low side, indicated by low scientific literacy, low level of knowledge, weak technical capabilities, and so on. The Planning and Development Department of the U.N. indicates that China ranks 87th in the world on the human development index, which covers various social, educational, and health factors.

Although some areas or regions could have a high human resource development score, the poor mountain and minority areas would score much lower than the national average. The differences in human skill,

education, and other capacities between different regions are well recognised. In the following discussion we comment on some aspects of human resource development in China.

Education

In modern society social and economic development require that the workforce have scientific and cultural knowledge and working skills, and can deal with complicated work. This kind of ability can be imparted through training in modern education.

> The first requirement for enhancing educational levels is to increase investment in educational facilities, both material and human ones. In China's case such investment is not very high. According to the World Bank's *World Develop-ment Report 1997* , the percent-age GDP devoted to education in China is lower than in many other countries (Table 1).

China's educational outlay is lower than the average level of low-income countries. The consequences of lower educational investment are reflected in the poor quality of teachers, inadequate laboratory facilities, poor housing infrastructure of schools, and instability in teaching institutions.

One suggestion for improving the situation is that educational investment should not be made only by the government. Enterprises and individuals should share the responsibility. The co-operation of different agencies should be encouraged to form a perfect human resource investment market. Such co-operation takes place in many developed countries. For example, in Japan, only 16% of colleges are run by the state or local government, and 84% of them are private. There are 2000 private colleges in America out of 4000 in all (Chen Mingsheng 2002). Another suggestion is that employees or unemployed people should have mechanisms to allow them to study with payment from employers. It is necessary to build some system of collaboration.

Elementary education

From the economic perspective, the usefulness of elementary education is evident in human resource capacity building. Its gains are more to the society than to the individual. Nine-years' compulsory education and three-years' senior school education belong to the elementary education system

in China. Its essential function is to make individuals civilised, acquainted, virtuous, and disciplined as a part of basic civic awareness. However, 70% of students undertaking elementary education study in the counties, 90% of all illiterates are distributed in the counties, and a half of them are in the west! The dropout rate in the counties' elementary and middle schools is generally 15%, but is about 30% in the third grade of junior school. In some towns and counties the ratio of dropouts in the third grade of junior school is even higher than 50% (Anonymous 2002a). The reasons for this are explored below.

(i) Since 1998, popularisation of nine-years' compulsory education has been characterised as a rush job. The quality aspect of education as well as checking and ensuring acceptable standards have been under-emphasised. Thus the foundation is weak. Some areas and schools don't adequately follow up on initial gains (enrollments) after carrying out the campaign for nine years' compulsory education, so the number of dropouts increases. (ii) As per the emerging new arrangement, fees are charged to higher college graduates. This is a lot of money for county students. Besides, many students cannot be employed after graduation. This affects the mentality of students and their parents from the counties. In China 500,000 illiterates join the workforce every year, most of them from more backward counties. People are illiterate because of poverty, and illiteracy in turn leads to poverty, forming a vicious circle. There are about 200 counties where elementary school education is not yet popularised. What should be done?

- Change the mode of spoon-feeding. Education doesn't only impart knowledge to students, but also makes students know how to learn, work, live, and cooperate in order to face up to problems and resolve them, adapting to society on their own initiative and facing its difficulties, which is important.
- Continue compulsory education support by the government, and make governments at all levels promote compulsory education.
- Standardise the fee-charging regulations of county schools.
- Enhance the power to support minority and poverty areas to provide for nine-years' compulsory education for county students.
- Increase support from the national debt fund for elementary education.

There is yet another problem, related to children from the 'floating population' going to school. At present 120 million in the country have left their legal residences and constitute a 'floating population' that lives without proper documentation. Of these, 2.4–3.4 million are school-aged children of civilian workers. There are 200,000 such children in Beijing,

Shanghai, and Shenzhen alone (Lu Jufu 2002). Besides, civilian workers' children going to school often face problems. These problems include lack of appropriate teachers, low level of teaching skills, unreasonable fees, discrimination, unfair treatment, and so on.

Higher education

The role of and necessity for higher education in facilitating economic and social development are increasingly realised in China. The need for changing the orientation of higher education from elitist to a popular or useful type is also recognised. However, higher education is very costly. Several resource-scarce poor counties cannot afford it. In such situations accessing distant education facilities through modern information technology (IT) is becoming important. It reduces the learning costs for students as well. This is one approach to building teams of well-qualified workers to promote development in different sectors and industries. The need for enhancing the subject coverage of education, including foreign language, finance, accountancy, law, international trade, software, and so on is also emphasised. This is all the more relevant with China's entry into the World Trade Organisation (WTO).

In keeping with the above, the following recommendations are made.

- Reinforce teachers' training to improve teaching quality and bring out better quality talents.
- Adopt English-Chinese bilingual teaching to adapt to the needs of economic globalisation.
- Develop flexibility in management and openness in teaching by introducing a credit-hour system so that students will have more choices to develop their own interests, preferences, specialities, and so on.
- Organise class lectures to undergraduates from professors, and impart knowledge to students face to face.
- Make sure that academic cadres spend more than 80% of their time in teaching and research, and reduce evaluation, reporting, and so on, which detract energy.
- Promote initiatives directed to international co-operation in teaching and education and have collaborative links with international educational institutions.
- Focus on specialisation and marketing of merit and uses of the same.

Adult education

Adult education is not only a means to educate the adults who missed education during their childhood, it is also the most important way to

prepare the workforce to adapt to the changing needs of their occupations and acquire skills to do better in the competitive job market. Specific vocational education and techniques to promote it are now available. Learning while working is being emphasised by several industries and agencies. This provides an opportunity to build close links between industry and educational agencies to facilitate sustainable development of different regions.

Non-government education

Social organisations or individuals other than national institutions run schools with their own financing, which does help to reduce the financial burden on the state and to identify talented students. Most educational priorities are demand driven and hence immediately usable. There are about 60,000 non-government educational institutions of different levels in China, with about 10 million students in these schools, of which there are about 2,000 undergraduates. One successful model is the Xi'an Translation College. This clearly shows that non-government colleges can exploit unconventional opportunities for human resource development without government financing. But there are some problems in the non-government education system.

- Property rights are not clear, and enterprises and business people do not dare to invest in education.
- The scale is limited and the quality is not high. Such education fell into the narrow orbit of specialised and senior-level vocational education.
- There are no uniform guidelines or policies.

Family education

The family is the nucleus of society. The family is also the basic unit imparting culture and values to children. This is an important form of education. The impact of family education influences the individual's quality, potential, psychology, and character in future life. Several factors must be noted.

In counties where parents go out to work, children are always with the grandparents, who teach and manage them. Due to the generation gap and limited education of grandparents, they cannot take on the full responsibility of educating children.

Education of town employees' children is a big problem. Because of planned parenthood, in China an urban family commonly has only one child. Not only parents but also grandparents treat such children as 'little emperors', and such children with pampered childhoods have poor psychology and endurance and may find later life difficult.

The education of children from single-parent families is another problem. In China, the divorce rate is growing and one-parent families are increasing. These children are hurt psychologically and behave abnormally. Their grades decline. This adversely affects the quality of the country's population.

Social education

Knowledge and skills are imparted through different educational media such as broadcasting; film and television radiate every kind of knowledge and skill. Building of community publicity facilities in these fields is an important means of social education.

Hope project and other supporting education activities

The Hope Project, introduced to help children who dropped out of school, is regarded as one of the most successful of all help movements in China. During the past 10 years, the Chinese Juvenile Development Fund Institution has received about 2 billion yuan from within the country and overseas, sustaining 2,490 needy children out of school, and helping them to complete their schoolwork. About three million students enjoy new school houses in 'Hope Elementary Schools'.

However, from the viewpoint of human resource development, the Hope Project helps only a part of the society—children out of school. There should be broader coverage, involving other weaker groups: socially needy students, minorities, unemployed men, needy families, and so on.

It is necessary to assess the needy students in higher colleges. For instance, in North West Agriculture and Forestry University, there are 130,000 undergraduates, of which 31% are needy students whose monthly income is less than 150 yuan. There are 13% especially needy students with monthly incomes of less than 90 yuan (Liu Sheng et al. 2002a).

Most needy mothers live in extreme poverty, lacking grain rations, with limited sources of income, unable to enjoy basic social welfare such as education, hygiene, and health facilities. Their cultural quality and health are poor; more than 80% of them are illiterate, and a half of them have gynaecological diseases. They silently endure all tribulation for their children and families. Of all the needy in China, needy mothers face the hardest situation. By the end of 2001 in the 'Blessedness Engineering Help Needy Mothers' Movement', which is carried out by the Chinese Planned Parenthood Institution and Chinese Population Newspaper Office, rehabilitation funds have been set up in 451 counties and 1,130 needy mothers have been sustained there during the last 7 years (Anonymous 2002b).

Several sections of society have been helping needy children. For example, 'the Children's Plan' implemented by the Chinese Children's Fund Institution has helped 1.1 million children out of school; the army has donated 39,700 million yuan (about US$40 billion) to assist in building 2179 Hope Elementary Schools, and has helped about 500,000 children return to schools and finish study.

Health and birth control

The quality aspect of human resources should not be confined to educational degrees and levels of skills. Physical and psychological health are equally important. Provision of health facilities and birth control reduce pressure on parents (especially women) and are important measures emphasised in China. In this context, it is necessary to popularise basic hygienic knowledge, improving people's physical quality and consciousness about the same.

All levels of schools, especially county schools, should organise facilities according to the students' psychological and physical needs. In China, about 80% of students are studying in the counties. In the western counties of China, 16% of schools are still without physical education. The students of 23% of all villages have not opted for physical education, and 70% of the counties don't give lessons in accordance with the education compendium (Lu Li-jun and Li Xiaowei 2002).

To promote the physical and psychological health of the people, proper working environments should be provided by industries and employers. An associated aspect of this is to guard against industrial diseases. According to the news investigation reported by CCTV on April 28th 2002, joint venture and private enterprises are areas in which there are high occurrences of disease. The incidence of one disease in 2000 was 43.8% higher than in1999.

Gender dimension

Effective social and economic development depends on the optimal use of human resources, with women equal partners in the process. The female's lower position or exclusion is reflected through various indicators. Nearly 70% of Chinese illiterates are female, of which 90% live in counties, and a half of them are in western areas. In the counties, the dropout rate for female children is very high. Female children are the first to be dropped from schools when the family has a resource crisis. The gap in male and female education is very high in China, as in many developing countries.

The consequence of such anti-female attitudes is very severe in terms of future capacities of children raised by illiterate mothers.

Capacity and institution building

Apart from ensuring autonomy or freedom of choice in different contexts, evolving supportive institutions is important for human resource development. Capacity and institution building are necessary to develop and use human resources appropriately. This accelerates economic development and social improvement and can be promoted in several ways.

- Improve personnel's managing ability and technical ability.
- Simplify organisations and rationalise the numbers to improve efficiency. In some areas some organisations have become overstaffed and even redundant, after the reforms. In the last 20 years, the personnel supported by our national finance has increased to 88.7%, exceeding the numbers retiring triple fold. The proportion of civil servants is 5 to 6 times higher than in developed countries. Many organisations are redundant.
- Emphasise market-driven processes. The whole work culture needs to be changed. This can be facilitated by: (i) following market norms to guide the organisation (e.g., good work/ good pay), and dealing well with personnel focussing on efficiency and equity; (ii) ensure employees' input in planning work and other schedules; (iii) make work assignment and routine management participatory, accepting reasonable and feasible suggestions; (iv) implement a welfare system for pensions, health insurance, and so on in addition to salary; and (v) introduce a worker profit-sharing system to cover asset stocks as well as dividends.

Government co-ordination

Human resource development and allocation are generally directly or indirectly coordinated by the government. However, to rationalise it and enhance efficiency the following suggestions should be considered.

- Set up a special human resource governance organisation to practise macro-adjustment and co-ordinate the relationship of different human resource development agencies (e.g., guilds, organisations, schools, enterprises, factories, and so on).
- Coordinate with the country's tactics of developing the west and the strategies for science and education development.
- Encourage a competition and elimination system among party cadres, enterprise managers, expert technicians, and others because the status of their efficiency directly affects the efficiency of all social human resources and their contribution to development and governance.

- Institute a system and policy framework for human resource investment. Most importantly, the government should institute systems, ensure the necessary policy framework and mechanisms for human resource and investment therein, correctly analyse the current human resource structure and potential needs, and forecast and predict supply and demand to avoid waste of human resources.

It is estimated that in China there are at least 200 million surplus county labourers. As agricultural modernisation continues, the needed agricultural labour forces will decline further. To help the growing workforce be gainfully employed, we need information on quality and quantity of labour to be used by the firms. At the same time, workers will need information on what qualifications and skills are required by their potential employers.

Hence, aiming at civilian workers, the government should enhance employment instruction and technical training and improve services such as legal aid, work safety, and so on. For counties these will have to differ according to the local situation. In this regard, the following are some suggestions to be considered.

- Provide scientific/technological training and information services. Periodically organise training by experienced experts and technicians to give lessons to villagers. According to the seasons, hold short-term training classes, imparting what farmers need and popularising urgently needed practical techniques.
- Increase culture building activities in mountainous areas and counties.
- Adjust the industrial structure for employment enhancement and identify and use human resource potential.
- Guide and help talented workers to have mobility to move to different areas, industries, departments, and so on to avoid stagnation and waste of rich human resources.

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Chapter 11

Off–Farm Industries in Mountain Areas of China

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Introduction

China is a country with a large area of mountains as well as relatively small per capita arable land. It is a key national concern to meet the demand for food. Since rural economic reform in 1978, China has seen a rapid growth in agriculture, and a food deficit situation has changed to a food surplus one. Having met the people's basic needs for food and clothing in mountains, the focus has shifted to providing a healthy and prosperous life for people. In meeting this goal, increases in farmers' income in mountain areas will play a crucial role. This is also a practical necessity to maintain a stable society and help sustainable economic development in China.

Off-farm industries in China

However, as the historical experience of developed countries shows, in the long run decreasing returns and declining consumer money spent on direct, primary products from agriculture make sustaining rising incomes for farmers difficult. As a country becomes richer, consumer spending on farm products tends to decline. Hence, the movement of the workforce out of agriculture becomes essential to sustain high incomes. The workforce should move from primary, to secondary, and then to tertiary sector activities. This will be reflected by a changing composition of income of farm households. To illustrate this Table 1 summarises pure (net) income of farmers in China and the changes in its composition.

Table 1 shows that the pure income of farmers in China has increased in the past 10 years, and the percentage contribution of off-farm industries in farmers' income has also gradually increased. However, the percentage of income from agriculture has been decreasing since 1995, and its contribution to total pure income of farm households has declined. The declining rate of agricultural income after 1995 resulted from the declining market for agricultural products due to surplus of supply. Hence, increased agricultural output did not mean an increased proportion of agricultural income for farmers. In contrast to this, the off-farm industries' contribution to household income rose to 4,899 yuan RMB in 1995, exceeding income from agriculture (4,760 yuan RMB) for the first time.

Figure 1 graphically illustrates these changes. The relative contributions of off-farm industry and agriculture to farmers' incomes were 50.7 and 49.3%, respectively, in 1995. The corresponding shares changed to 64.7 and 35.3% in 2000. This shows the changing structure of sources of farmers' incomes moving away from agriculture.

Pure income per capita and difference in GDP in different regions in China

Changes in farm household incomes: regional dimension

As per Figure 2, farmers' pure income per capita has shown an increasing trend during the years from 1991 to 2000, but the difference between the mountains and the plains has also increased. Farmers' pure income per

capita in mountain counties has increased from 495 yuan RMB to 1,894 yuan RMB, while the corresponding change in hilly areas was from 596 yuan RMB to 2,302 yuan RMB, and from 700 yuan RMB to 2,600 yuan RMB in the plains. The difference in farmers' per capita pure income between mountain areas and the plains was 205 yuan RMB in 1991 and 700 yuan RMB in 2000.

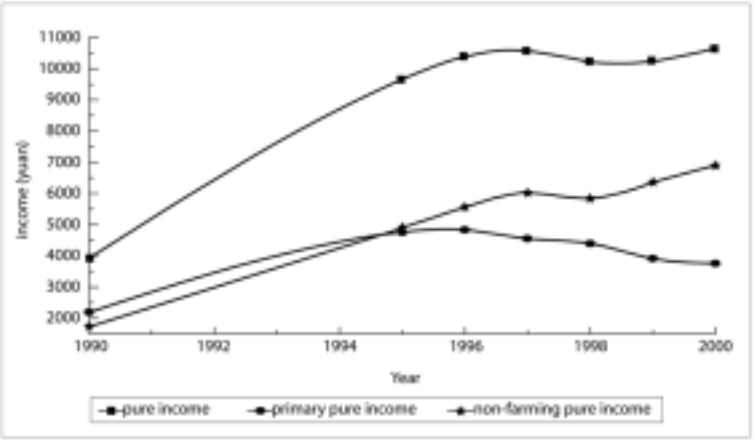

Figure 1: The trend of income of farm households (1990-2000)

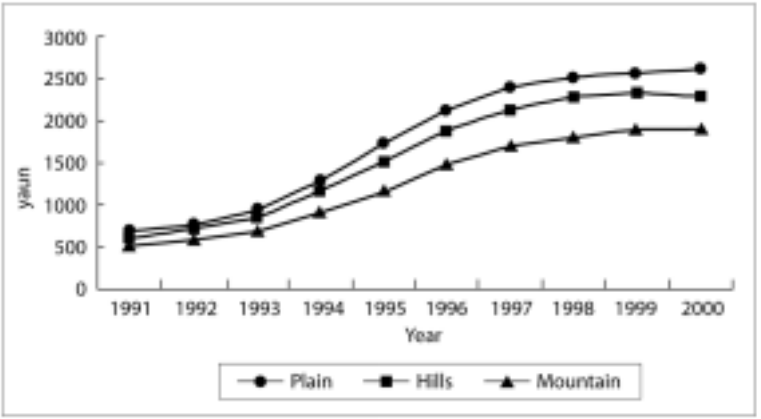

Figure 2: The changing trend of pure income per capita (1991-2000)

Regional income differences: role of off-farm industry

Although in 2000 counties in the plains comprised only 31% of the total counties in China, their GDP accounted for 46% of the total. The GDP from counties in both hilly and mountain areas made up only 54%, although they account for 69% of the total counties in China.

Table 2 also indicates that GDP per capita in mountain areas, hilly areas, and the plains is 4,194 yuan RMB, 5,424 yuan RMB, and 6,333 yuan RMB, respectively. The percentage of added value of agricultural output in GDP is 29.2, 26.6, and 25.5% in mountain areas, hilly areas, and the plains, respectively. If the added values in the secondary and tertiary sectors are put together (reflecting the total output value of off-farm industries), the percentage of added value of off-farm industries in GDP is 70.8, 73.3, and 74.8%, respectively, in the three areas. There is not much difference in added value of agricultural output per capita in the mountains, hills, and plains. In terms of added output value of off-farm industries per

capita, it is 1,766 yuan RMB in mountain areas, which is 62.7% of that in the plains. The difference in pure income per capita between the mountains and the plains is chiefly due to differences in the development of off-farm industries.

Case studies in different regions

Eastern China: a comparison between mountain areas and delta areas of Zhujiang River in Guangdong Province

The average per capita GDP in the 50 mountainous counties in Guangdong Province in 2000 was 5,687 yuan RMB, of which the added value of agricultural output and off-farm industries, respectively, were 1,818 and 3,868 yuan RMB. Average per capita GDP in the delta area of Zhujang River was 31,989 yuan RMB, of which the added value of agricultural output and off-farm industries was respectively 1,858 and 30,130 yuan RMB (Guangdong Statistical Bureau 2001).

The following conclusions can be drawn from these data.

a) The average per capita GDP in the developed delta areas of the Zhujiang River is much higher than in the 50 mountainous counties. The added output value of agriculture per capita in those two areas is not much different, though in the mountainous counties it is slightly lower than in the more developed delta areas. The added output value of off-farm industries per capita in the delta area, however, is much higher than in the 50 mountainous counties with a difference of 26,262 yuan RMB. The lower position of the economy in mountain areas is mainly due to underdevelopment of off-farm industries.
b) In agricultural production, the delta area of the Zhujiang River has favourable factors such as water and thermal resources, and higher potential for agricultural productivity. Yet agricultural contribution to farm income growth is constrained by declining product prices and low elasticity of demand for agricultural products. On the other hand, agriculture in mountain areas has various constraints. They often have a high input–output ratio due to labour-intensive practices and absence of economic diversification. Yet, due to scarcity of agricultural products in the mountains and higher prices, the per unit pure income from agricultural production in mountain areas is higher.
c) In terms of off-farm industries, there is a big difference in both economic structure and development level between delta areas and mountain areas. The ratio of income from agriculture to that from off-farm industries in the developed delta areas is 5.8:94.2, indicating that most income comes from secondary and tertiary industries. The contribution of tertiary industry to GDP per capita is higher than secondary industry. In contrast, the

corresponding figure in the 50 mountainous counties is 8:17, indicating that income in mountainous counties is mainly from primary and secondary industries with very limited contributions from tertiary industry. Secondary industry in the more developed areas is composed of processing and assembling enterprises plus service activities with high added value—a characteristic of a post-industrial society. Secondary industry in mountain areas, however, is composed of primary processing of agricultural and mining products with low added value and low technical requirements—the characteristic of a pre-industrial society.

Western China: a comparison of Chengdu plains and mountain areas in west Sichuan

To illustrate the spatial difference in economic development between the mountains and plains in western China, a comparison between the Chengdu plain and west Sichuan is presented. Five counties from the Chengdu plain (Shuangliu, Guanghan, Xindu, Wenjiang, and Pixian); five counties from the Ganzhi area (Kangding, Luding,Yajiang, Ganzhi, and Batang); and five counties from Aba prefecture (Aba, Lixian, Shongpan, Jiuzhaigou, and Markang) were selected randomly. The average per capita GDP, per capita added output value of agriculture, and per capita income from off-farm industries in these 15 counties have been calculated (Sichuan Statistical Bureau 2001) and are shown in Figure 3.

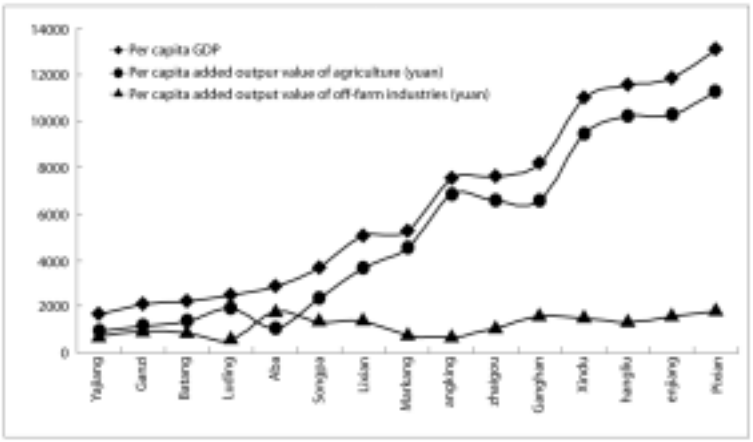

Figure 3: Per capita GDP and added output value of agriculture and off-farm industries in selected counties in China

The difference in economic development in the 15 counties has a strong spatial feature. A high level of economic development characterises the five counties in the Chengdu plain, a medium level of economic development in the five counties in Aba Prefecture, and a low level of economic development in the five counties in Ganzhi Prefecture (except Kangding).

The added output value of agriculture in Aba county, for instance, is 1,798 yuan RMB, the highest in all the counties, and surpasses all the five counties in the Chengdu plain. The added output value of off-farm industries in Aba county is, however, the lowest (1,075 yuan RMB). This has made per capita GDP in Aba county much lower than that of counties in the plains. This once again shows that the low level of development of off-farm industries is the reason why mountainous counties are underdeveloped. The per capita added output value of agriculture in Jiuzhaigou and Langding is low, but the average per capita GDP is higher than that of other mountainous counties. Their level of economic development and structure of incomes are similar to those in the more developed counties in the plains. The reason is that the two counties have benefited significantly from off-farm industries like tourism, indicating that the key to promoting development in the mountains is to develop off-farm industries.

An analysis of the structure of GDP in the mountains and plains shows that the average per capita agricultural output in the plains and mountains are both lower than 2,000 yuan RMB, without significant difference, but there is a big difference between the plains and the mountains in output value of off-farm industries. The output value of off-farm industries accounts for about 90% of GDP in the plains, but in mountain areas it is 70% of GDP. Thus, the 'poverty' in mountain areas or the gap between the mountains and the plains is mainly due to underdevelopment of off-farm industries in mountain areas.

Opportunities and challenges for development of off-farm industries in mountain areas

Advantages of off-farm industries in mountain areas

a) Reduced pressure of demand for cereals can free mountain areas from producing grains. Since scarcity of agricultural products in China in the past has now been replaced by a general balance between supply and demand or by a surplus of production in some years, mountain areas can be freed from producing their own grain supplies. With development of a market economy in China, the inhabitants of the mountains have opportunities to engage in off-farm activities. Thus

they have options to choose their jobs and businesses. They have less compulsion to produce cereals and subsist on low incomes.

b) As the industrial structure in the more developed plains is upgraded, traditional industries with agricultural products as their raw materials are being transferred to mountain areas. These include production of green foods, famous beverages, famous cigarettes; production of medicines and nutrients using traditional Chinese herbs and natural products; production of cloth and gowns with linen, cotton, and silk as raw materials in textile industry; and so on. Promotion of such industries in mountain areas will fill the gap in markets after the industrial structure has been upgraded in more developed areas. Besides, mountain areas will have their unique traditional industries. The raw materials in mountain areas, for instance, have not been polluted by chemicals. Their source of raw materials is nearer to production bases. Furthermore, mountain areas have plenty of labour. If traditional industries in mountain areas could be renovated using science and new technology, there could be a vast potential for developing off-farm industries there.

c) The scope for recognising, upgrading, and harnessing niche resources and opportunities has significantly increased with the rising level of links and integration of mountain areas with market centres in the plains. Liberalisation and other market reforms help the process. Mountains can have comparative or exclusive advantages in a number of off-farm activities or industries. Mountain areas may not have competitive arable lands, but they have land resources for other high pay-off uses. Mountains have unique biological resources, forest resources, water resources, and so on. They can develop forestry, livestock, green products, and Chinese traditional medicine as long as their supply of grain from elsewhere is guaranteed. To harness the potential it is also important to promote (i) a processing system of agricultural and natural products, which means to enhance the added value of agricultural products and to establish famous brands of products and (ii) development of typical biological products, small hydropower stations, ethnic industrial products, and tourism.

d) Women are now playing an important role in development of off-farm industries in mountain areas. Their role is conspicuous in the following aspects. (i) As domestic labourers, women and children have been an important workforce in mountain areas (as in the sectors of farming and livestock). Due to this men are able to work outside in cities. (ii) Women are playing a key role in the courtyard economy. Domestic livestock and domestic processing of agricultural and sideline products have provided a good source of household income, to which women make great contributions. (iii) Of all out-migrant labourers, men are mainly engaged in heavy work as construction workers, porters, cleaners, security men, and so on., while women are chiefly engaged in service

work as babysitters, domestic workers, restaurant and hotel waitresses, dress saleswomen, and hairdressers. With social development there will be a greater demand for female labourers than male labourers in cities. (iv) In underdeveloped areas, education and skill development programmes for women will help promote development of off-farm industries. Since 1988 about 20 million women have joined the literate population, and about 3 million women have received training and technical skills with support from China's National Federation of Women.

Challenges for development of mountain areas

a) Forming purchasers' market bodies may harm mountain areas due to their less efficient off-farm industries. In the past, development of off-farm industries was usually based on resource-oriented strategies, taking it for granted that rich local resources could offer economic development forever. But this is not the case in the present market economy, where it is not resources that dictate markets but markets that allocate the resources (Chengdu Institute of Mountain Hazards and Environment 2000). Therefore exploration and use of resources should be based on market demand. Off-farm industries should be developed on the basis of their comparative and competitive advantages. The present structure of off-farm industries in mountain areas in China is still resource-centred. With development of a market economy and an open policy, China has gradually been turned from a commodity-shortage economy to a commodity-surplus economy. Traditional off-farm industries with low added value, low technology, and high inputs of capital and labour will face challenges in a buyers' market. Enhanced competitive ability of products and industries is, therefore, a lifeline for development of off-farm industries in mountain areas. Hence, the need for a new approach and strategy.

b) Off-farm industries and environmental protection—five types of small enterprises have been closed. There are many small, local, and scattered enterprises in mountain areas, including small mines, small metallurgical plants, small paper plants, and small food factories that were established on the basis of local resources. Some of them may not only have negative impacts on resources and the environment, but also have little scope for development. As of now most of them have been closed. As a result, output of coal decreased from 615 million tonnes in 1996 to 200 million tonnes in 2001, which has a negative impact on off-farm industries, income, and employment in mountain areas.

c) Policy and public projects—the official ban on cutting natural forests has significant impact on timber and related industries. After the big flood of the Yangtze River in 1998, the central government began to be aware of the importance of conservation of mountain environments.

Programmes to ban cutting of natural forests and to return marginal arable land to forest land (grassland) have been launched. During 2000-2010, 96.2 billion yuan RMB will be invested in conserving natural forests. Timber production will be reduced by 19.9 million cubic metres. At the same time, 94.3 million ha of forest will be put under protection, with 740, 000 workers retired or transferred to other jobs. All these actions are significant for environmental restoration in China. This, however, poses a great challenge for economic development in mountain areas in the short run. For years the timber industry has been a key industry in many mountain areas, and a significant part of their revenue came from it. After the ban on cutting natural forests, both revenue and GDP in these areas have declined. As transportation and service industries related to the timber industry also declined, many workers have been laid off, causing decreases in income for local inhabitants. The GDP in Ganzhi Prefecture of Sichuan Province, for instance, declined by 11% in 1999 and continues to decline.

d) Infrastructure—market, transportation, and telecommunications are still key problems for development of mountain areas. Problems in mountain areas include a poor economic foundation, shortage of energy and capital, backward technology, shortage of technicians, and, in particular, the poor education of people. In poor counties in China, 16.3% of active labourers were illiterate or semi-illiterate in 2000. For ethnic poverty groups, the illiterate or semi-illiterate constituted 30–40%. Up to the end of 1999, of all villages in 637 ethnic counties, 18.2% still did not have access to highways, 16.5% did not have electricity, 56.5% did not have piped water, and 57% did not have telephone facilities (China State Statistical Bureau 2001a). The biggest challenge for development of mountain areas is the missing or limited links between scattered settlements and major marketplaces.

The main off-farm industries in mountain areas

Ecotourism

Due to its natural and diverse landscapes, mountain areas enjoy abundant tourism resources. As an industry with potential for harmonising the relationship between people and nature, ecotourism should be promoted as a part of ecological regeneration in the mountains. This will help local inhabitants realise the economic value of their environmental resources such as forests, grassland, green mountains, and clean water and air. They will be induced to protect and conserve mountain environments in their own interests. At present ecotourism resources in the mountains are not fully developed. A comprehensive development of ecotourism resources should be promoted on the basis of a master plan, promoting opportunities

for people for sightseeing and vacations, holding business and other meetings, carrying out scientific investigations, exploration, and so on. Well-known scenic sites in China like Jiuzhaigou, Huanglong Temple, and Four Maiden Mountain have received 1.9 million tourists, generating income of 960 million yuan RMB, which accounted for 14.2% of the GDP in Aba Prefecture (Sichuan Statistical Bureau 2001).

Hydropower

There are 670 million kw of potential hydropower in China, of which the exploitable volume is 370 million kw. Mountain areas are a source of 95% of all exploitable hydropower resources in China. Hence there is huge scope for establishing large- and medium-sized hydropower stations. As a clean and recyclable energy, hydropower can become a key industry in the mountains. In south-western China, in particular, large hydropower stations with an installed capacity of over one million kw have other advantages of inundating a small area, displacing and resettling a small population, and high returns on investment. They could be major bases for electricity generation and transportation from western China to eastern China. Medium and small-scale hydropower stations will free local people from depending on cutting trees and grass for fuels, which have negative impacts on mountain ecosystems. Replacement of coal-generated electricity by hydropower will allow medium and small-scale mines to close, reducing the chances of instability of slopes, loss of soil, and occurrence of mountain hazards caused by deforestation. Use of hydropower will also change the structure of energy use and promote the focus on clean energy with a positive impact on global warming.

Transportation and telecommunication

A key problem in development of mountain areas is the poor infrastructure. The limited accessibility and high cost of transportation deprives mountain areas of gains from marketing to cities and prevents the flow of technologies and experiences from more developed areas. This also obstructs the communication so essential for development. To promote development of off-farm industries in mountain areas, the poor transportation and telecommunication networks should be improved. Some progress in these fields is apparent. In terms of new highways in state-level poverty counties, the length of highway added was 63,000 km in 1998; 67,000 km in 1999; and 46,000 km in 2000. Of all villages, 95.4% have electricity and 72.2% have telephone facilities. The percentage of villages that have postal service and the percentage of villages that have access to highways, respectively, accounts for 75.6 and 91.9%; 94.9% of all villages receive television programmes.

Green foods and natural biological medicines

In China 90% of the total wild animals and plants are distributed throughout the mountains. When environmental pollution becomes serious in the cities, green products from the mountains become a preference of many urban residents. Famous mountain products include different types of alcoholic drinks, cigarettes, teas, and so on. These products are, however, facing the problem of small-scale and scattered production. For future development much effort should be placed on improved production bases, enhanced quality, and a strong focus on publicity and marketing of products. Trained personnel are required to make production, supply, and marketing parts of an integrated chain with greater advantages of scale. Diverse biological resources (medicinal herbs, and so on) offer opportunities for this.

Mining

Mountains are rich in mineral resources. Of over 170 minerals in China, most are found in the mountains—so much so that mining areas in China are often called 'mining mountains'. Since mineral resources are physical bases for economic development, it is impossible not to open mines. But to open mines and to develop relevant industries also have impacts on the environment—a problem hard to tackle. However, the best way to tackle it is to identify the appropriate level and scale of mining for each deposit, and to carefully access the market demand. Extracting minerals without long-term market demand would imply a waste of resources.

Ethnic handicrafts

Mountains have often been inhabited by ethnic minorities. They have a large variety of local, labour intensive, hand-made products. An effective way to develop off-farm industries in mountain areas is to promote production of traditional and ethnic handicrafts and brand them as unique products. In this way by embodying the characteristics of traditional ethnic culture and indigenous skills, a foundation for unique off-farm industries can be built. Some examples are wax printing, textile, gold and silver ornaments, and knives. This will also help in promotion of cultural tourism to complement ecotourism.

Circular labour migration

Out-migration of labour has been a main source of income for mountain inhabitants. An assessment of rural poverty in China indicates that the number of workers in the state-level poverty counties working outside in developed areas reached 15 million in 1998, 16.6 million in 1999, and 19.1 million in 2000. The average per capita income totalled 3,309

yuan RMB. If daily expenditure is taken out, each labourer sends back approximately 1,734 yuan RMB. Women have been a major component of migrant labourers. Anhua county in Hunan, for instance, has about 80,000 women working in Guangzhou and Shengzhen in Guangdong Province. The money they send back each year exceeds all the county's other annual revenue. For people who live in harsh mountain environments or those who have no local potential for development, gradual out-migration may be a good option. From 1990 to 2000 about 2.6 million people living in mountain areas have moved out.

Development of off-farm industries in mountains: some key issues

(i) It is essential to properly assess and understand mountain areas in terms of not only poverty, unemployment, and so on, but also regarding their development opportunities and constraints to be addressed. (ii) In place of copying the developed areas, in mountain areas off-farm industries should be developed as they offer comparative advantages to mountain areas. Even within different mountain areas, development cannot be uniform. Different areas may have different priorities. (iii) In the context of market-driven processes of development, the unique products of the mountains should have 'brand names' to promote their sale in rich consumer markets in and outside the country. (iv) Promotion of urbanisation through market towns, economic restructuring, and social transformation programmes is essential if mountain areas are to benefit from the policies and programmes directed towards liberalisation and economic opening. (v) Involvement of private market agencies in mountain development to promote capital investment and market links is essential.

The above aspects should be looked into while planning and implementing the initiatives discussed in this paper.

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Chapter 12

Sustainable Rural Tourism and Its Implications for Poverty Alleviation in Tibet Autonomous Region, P.R. China

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Introduction

Depressed areas have limited options for development because of various factors such as disadvantageous location vis-à-vis central consumer areas; limited natural resources; lower levels of economic development; undeveloped infrastructure; a shortage of investment in education, scientific, and technological research; and so on. In such situations, developing tourism becomes a high priority choice in poor areas. Although tourism is not a panacea to solve all development problems of remote and underdeveloped areas, it offers some useful opportunities.

Poor areas often have many tourist attractions because of unspoiled, special landscape and lifestyles, and persistent old cultures. At the same time promotion of tourism is constrained by poor infrastructure, limited development investment, insufficient accommodation and other services, lack of skilled human resources, and so on. Therefore both poverty alleviation and promotion of tourist facilities have to be addressed simultaneously.

This paper examines ways of reducing poverty in rural Tibet through the sustainable development of tourism. The notion of rural family tourism as a priority aspect of tourism development has been recommended to the regional government, and it is being adapted and carried out carefully.

Socioeconomic backgrounds and tourism resources in Tibet

Social and economic features

Tibet is a historically important area of over 1,200,000 sq.km. It is the second largest area in terms of provinces and has the status of an autonomous region in China; and is thus counted separately. It includes one city and six prefectures, with 74 counties and 6,422 villages. By the end of 2001, the total population of the region was 2,629,00; 93% of whom were of Tibetan nationality. The other 6.9% are Han, Menba, Luoba, Hui, Naxi, and Nu. The low population density (2 /km^2) is a significant factor influencing regional economical development. About 86% of the population depend on farming and herding. The GDP of the region is relatively low at 13,870 million yuan RMB in 2001 (5,307 yuan RMB per capita). GDP growth of 12.8% during the last year was the highest among all the provinces of China (Figure 1). Investment, as a major driver of growth, accounted for 61% of the GDP in 2001 with 8,577 million yuan RMB. This figure does not include the investment in the Qinghai-Xizang railway project of 2,000 million yuan RMB, or 386 million yuan RMB coming as aid and assistance from partner provinces and specific departments of the central government. The government revenue at local levels is rather limited—only 61,108 million yuan RMB in 2001. The average revenue per person is 234 yuan RMB because of lower tax policies. Government expenditure of 10,457 million yuan RMB in 2001 exceeds revenue because of the vast areas of land and consequent high administrative costs.

Figure1: The change of total GDP in Tibet in the past 50 yrs

Though the economy of Tibet has made some progress since the economic reforms undertaken by China, the regional economy still suffers from several gaps. (i) The growth and efficiency of the regional economy remain at low levels. The GDP per unit of land in Tibet is 116 million yuan RMB/km^2, which is the lowest in China. (ii) The financial revenue of all local governments is low, and the deficit is huge. The average proportion of government revenue to GDP is less than 4.4%; the huge financial deficit of 9,840 million yuan RMB binds the hands and feet of local governments, and limits their capabilities for development. (iii) The difference between urban and rural residents is growing. About 69% of the poor population (4% suffering from absolute poverty) are concentrated in rural areas. Their annual income equals 59% of the national average. Thus the general poverty of the rural economy is an obvious problem in Tibet.

Tourism resources

Because of its special altiplano landform, cold climate, difficult access, sparse population, isolation from population centres, and underdeveloped economy, there is little influence of damaging human activities on tourism resources. At present the ideal aboriginal scene of snow altiplano, historical cultural relics of the Tibetan people, and simple and unsophisticated folk customs are fully preserved in Tibet. The tourism resources of Tibet consist of natural unspoiled environments, historical and cultural monuments, and sustained folk customs and festivals.

Nature-based tourism resources

Tibet is located in the main part of the Qinghai-Xizang altiplano, bearing the name of 'the third pole of the world'. Its natural environment is famous for snow mountains, meadows, glaciers, and lakes. Tibet's natural wonders include the world's highest mountain (Chomolungma and its surrounding mountains); deepest canyon (Yaluzangbu); highest lakes; and most concentrated mountain glaciers. In Tibet there are 39 nationally protected wild plant species and 125 nationally protected animal species. There are 18 nature conservation areas with a total area of 401,000 sq.km, or 33% of the total area of Tibet. Among them, there are four national-level nature reserves with a total area of 352,000 sq.km. Also there is one national level resort, one national geological park, and two national forest parks.

Culture-based tourism resources

There are 161 cultural monuments designated in Tibet: 27 national-level monuments, 55 autonomous region-level monuments, and 79 county-level monuments. The Potala Palace, Jokhang Temple, and Norbulingka have

already been listed in the world cultural heritage lists. The Zhashilunbu Temple, Sajia Temple, Zongshan Relics, Guge Relics, etc. have been regarded as potential units in the world cultural monuments' list; there are three national-level historical cultural cities (Lhasa, Shigatze, and Jiangze).

Non-physical tourism resources

There are many non-physical tourism resources in Tibet, including rituals and practices relating to production and livelihood, local folk-custom festivities, festivals, and so on. Practices relating to production can be seen in the areas of agriculture, forestry, and pastoralism, as well as in habitations, settlements, and towns. Based on regional folk customs and religious cultures, Tibet can be divided into frontal Tibet, interior Tibet, An Tibet, and Kang Tibet. The clothing, architecture, religions, rituals, weddings, funerals, festivals, and methods of production differ significantly from region to region. In addition to the purely religious and local festivals, there are seven fixed grand tourism festivals: Xuedun festival, Azalea festival, Yalong cultural festival, Zhu Peak cultural festival, Xiangxiong cultural festival, Horse Race festival, and Tea-Horse-Ancient Road festival. These festivals promote the protection and restoration of local cultures and traditions of Tibet.

Tourism in Tibet

Organisation

The Tibet Tourism Bureau (TTB) was established in 1979 and symbolised the desire of the regional government to develop the tourism industry. In 1986, TTB was formally set up as a department of the government of the Tibet Autonomous Region in charge of the tourism industry. Later on TTB branches were set up in six prefectures and one city to facilitate the development and protection of local tourism resources. A similar organisation also exists at county levels where abundant tourism attractions and potential exist. Development Committees have been formed in the hotspots of tourism. In 1995, two non-governmental organisations were set up: 'Tibet Travel Agency Association' and 'Tibet Tourism Hotel Association'. The tourism organisations of both government and non-government agencies have played important roles in promoting sustainable tourism development in Tibet.

Growth

During the period from 1996 to 2000, the numbers of foreign and domestic tourists increased rapidly at an average rate of 17% per year (18.8% per year for foreign tourists and 16.3% per year for domestic tourists). The growth rate in tourism revenue has been 30.5% per year (15.3% from

international receipts and 10% from the local tax on tourism enterprises). In 2001, tourist numbers reached 686,000–559,000 domestic and 127,000 foreign tourists (including the tourists from Hong Kong, Macao, and Taiwan), as shown in Figure 2. Total tourism income was 750 million yuan RMB, of which 385 million yuan RMB was from foreign tourists (Figure 3). The total tourism income was equal to 5.4% of GDP in the year 2001–1.2 times higher than gross regional export earnings. The tourism industry has thus played an important role in the economic development of Tibet.

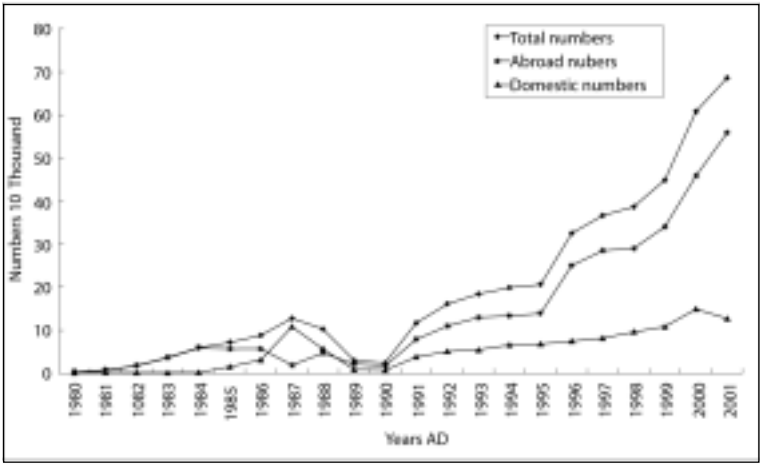

Figure 2: Change in the number of visitors to Tibet in the past 20 years

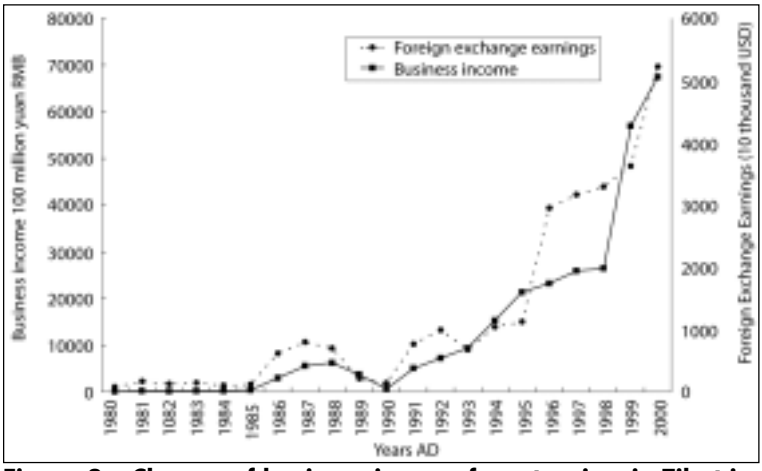

Figure 3: Change of business income from tourism in Tibet in the past 20 years

By the end of 2001, there were 167 tourism enterprises in total, including 35 travel agencies (19 international travel agencies and 16 national ones) and 97 tourism hotels (1 four-star, 14 three-star, 7 two-star, and 8 one-star) in this region. There are 5,713 guest rooms in total (about 12,600 beds); 29 fixed tourism restaurants; 3 tourism trade companies; 3 tourism vehicle companies with over 900 fixed tourism vehicles with over 8,000 seats. All tourism enterprises are state-owned with the exception of over 300 tourist vehicles belonging to individuals. They directly create 6,000 jobs, 62% of which are carried out by Tibetan people (in the year 2000), and 38% by other minority people. Nearly 30,000 persons are estimated to benefit indirectly from tourism-related earnings.

Tourist features

Arrival gateways

Because of the limitation caused by the Qinghai-Xizang plateau landform, tourism traffic has so far networked mainly with China's economic centres and commercial hubs. Figure 4 (drawn based upon the data on foreign tourists in 2001) shows that air transport is the main means for tourists to travel to Tibet. For example, Geermu, the only road gateway, was used by 5% of all foreign tourists in 2001. Air over-transfer through neighbouring provinces (Chengdu in Sichuan accounts for 43%) and a neighbouring country (Nepal accounts for 34%) was the main choice of tourists coming to Tibet. Besides Hong Kong and Nepal, there are no other international airline centres serving regional tourism. Accessibility is the bottleneck of sustainable tourism development. This situation will be greatly changed after finishing the Qinghai-Xizang railway in 2006.

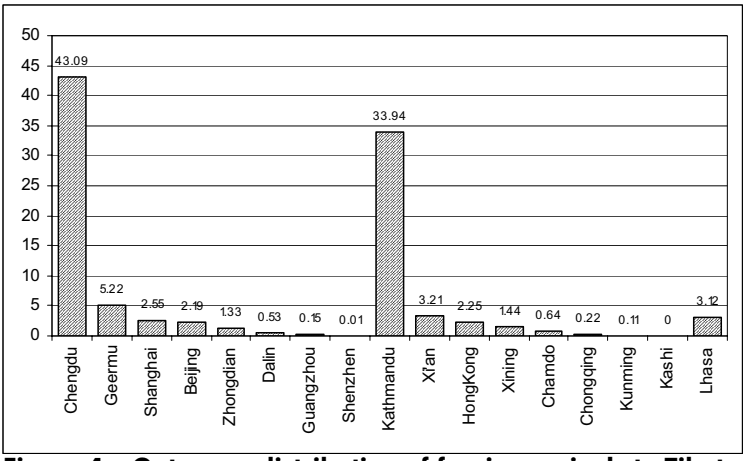

Figure 4: Gateways distribution of foreign arrivals to Tibet in 2001

The places of origin of tourists

Figure 5 shows that domestic tourists to Tibet are largely from the areas near to Tibet such as Sichuan, which accounts for 14% of all domestic tourists, or areas having higher development and higher incomes such as Beijing (22%), Guangdong Province (15%), and Shanghai (14%). This pattern is expected to change after opening the Qinghai-Xizang railway in 2006.

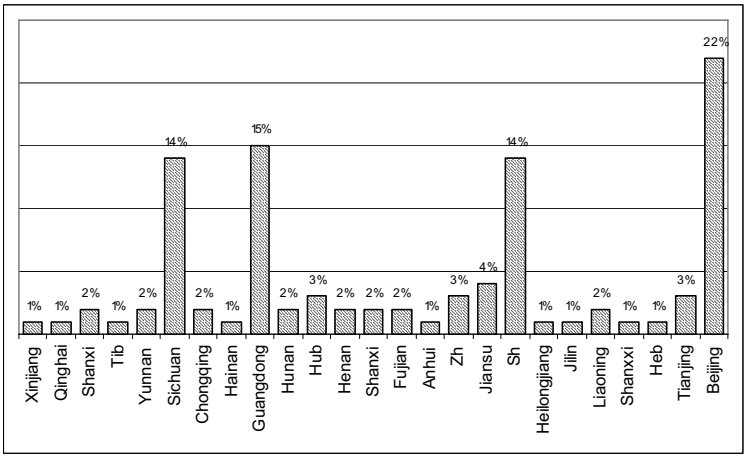

Figure 5: Break down of domestic tourists in Tibet by province of origin

Regarding foreign tourists, 23% were from the USA, followed by Japan (11%), Germany (8%), Holland (6%), Britain (5%), France (4%), as shown in Figure 6, which also includes Hong Kong and Macao (5%) and Taiwan of China (4%).

Categories of tourist

There are three categories of tourist in Tibet, as shown by Figure 7. The first is those that have much time or long vacations, such as retirees, students, and housewives. The second is those that have high earnings, such as staffers and businessmen. The third is those that have good education, such as teachers, engineers, lawyers, and so on.

CONSTRAINTS ON SUSTAINABLE TOURISM DEVELOPMENT IN TIBET

Weak tourism infrastructure

Modern and very comfortable facilities are an important step towards promoting tourism. This does not mean there are no tourists who live with

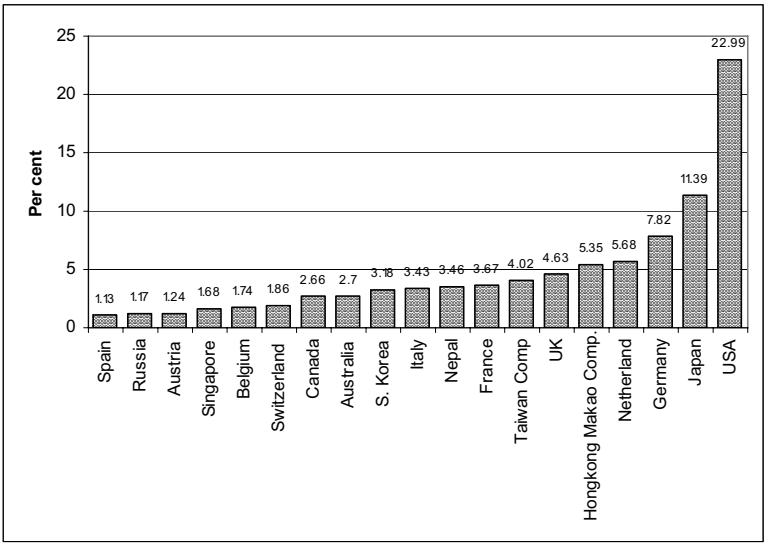

Figure 6: Break down of foreign tourists to Tibet by nationality

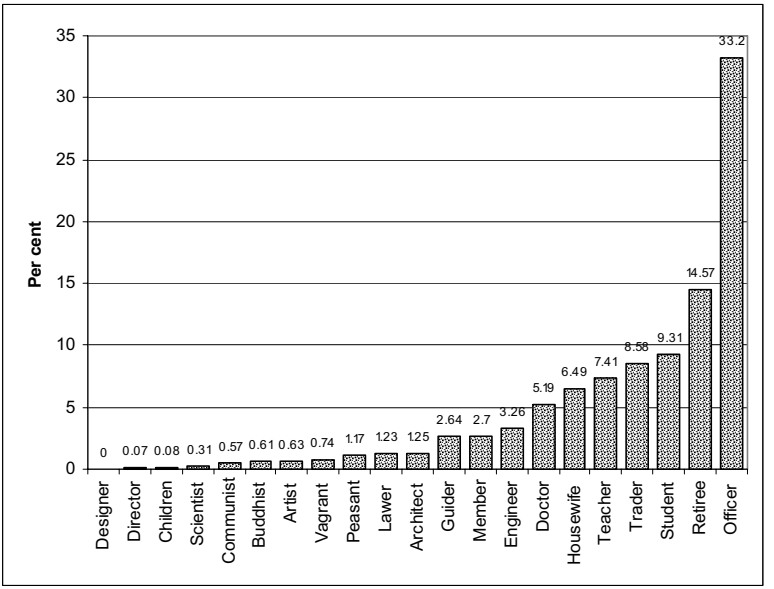

Figure 7: Break down of foreign tourists to Tibet by profession

simple facilities. However, in Tibet's case, the level and quality of infrastructure for attracting tourists are quite low. Due to lack of resources the government is unable to build the facilities required.

Furthermore, the lack of skilled professionals, ranging from tourist guides to senior managers, is another problem. However, things are slowly moving, and facilities for cultural tourism, ecotourism, and so on are being established.

Inaccessibility, high cost, and limited numbers of tourists

Limited accessibility and long distances constitute major constraints to tourism development in Tibet. For instance, the aeroplane is the main vehicle for tourists visiting Tibet, but the monopoly of one air company on the route has created many problems. Poor service and high ticket charges are some of the problems. Tourism in Tibet requires much more time because of the huge distances between destinations. According to the statistics of some travel groups, foreign groups stay an average of 7.13 days in Tibet, which is 0.87 longer than the national average, much higher than in other provinces and cities, and even longer than the permitted length of vacation for most tourists (Figure 8). The expenditure is also a little bit higher for Tibet tours. The average expenditure per day per foreign tourist was 153 USD in 2001, which was $45 higher than the average cost in the whole of mainland China. These constraints of inaccessibility, high cost, and longer tour duration limit the numbers of tourists visiting Tibet.

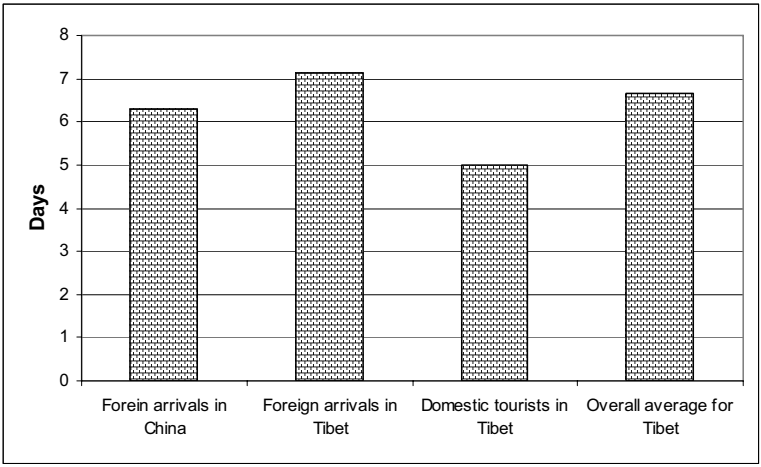

Figure 8: Average period of stay of visitors in Tibet

Seasonality and related imbalance

There is a long off-season of more than 6 months for tourism in Tibet because of the plateau climate with great temperature differences between the day and the night and relatively lower oxygen content in the air. The sharp seasonal fluctuation in the flow of tourists is a serious problem for the tourism business (Figure 9). In the off-season the occupancy rate in most hotels is less than 10%, even with price reductions of 40%. Some of them have to stop business. Therefore surprisingly high prices are charged in the busy season. The intensive competition and great risk within tourism enterprises can be especially harmful to small enterprises.

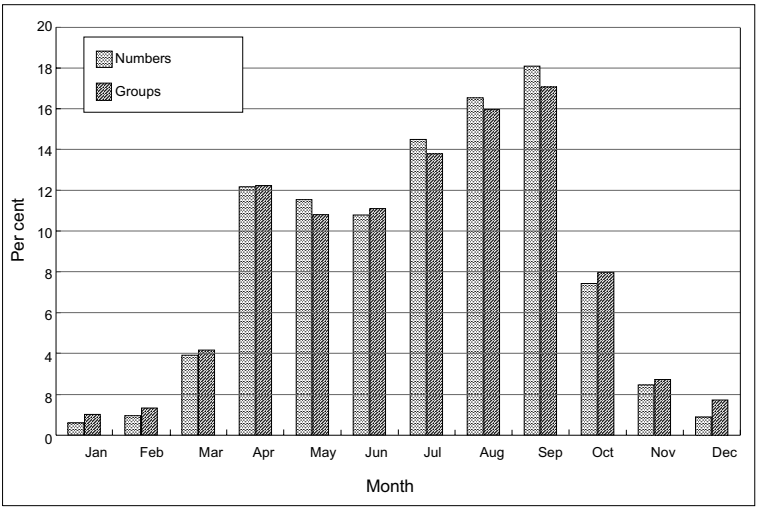

Figure 9: Seasonal flow of tourists in Tibet

The shortage of skilled workers

There is a strong demand for high quality workers who have skills to develop and manage tourism resources and provide facilities. But an investigation of tourism employees at the end of 2000 showed discouraging results, including the small number employed directly in tourism and their lack of requisite experience and qualifications.

Protection of fragile environments and cultural diversity

Tibet's environmental fragility and unique culture are well known. Tourism, despite its gains, also carries risks to both environment and culture due to its side effects. Concern for these factors has led to a cautious approach to tourism, which constrains tourism enterprises.

Similarly, the direct contribution of tourism to the poor population is rather limited, despite its important role in Tibet's economy. The participation of poor populations in the tourism industry is very limited, and a few groups with higher incomes take away most of the tourism income. This is despite the fact that the poor areas and the poor people protect most tourism resources. And yet they may suffer from the most negative impacts of tourism activities. This is a hidden constraint for sustainable tourism development.

Rural tourism: an option of sustainable regional tourism development and poverty alleviation

The implications of rural tourism development in Tibet

Most of the constraints to tourism in Tibet are linked to poverty. General poverty is responsible for lack of investment, enterprise, and skilled manpower needed for promoting tourism development. The general poverty in Tibet is due to both the economy and the society being primarily rural. Hence, eradication of rural poverty could serve as an effective step in promoting sustainable tourism development in the region. In this context, promotion of rural tourism should be strongly focused. There could be several links between rural tourism development and rural poverty eradication. (i) The tourism industry can promote the gains of market-driven processes in rural areas and transform the latter. (ii) Creation of infrastructure and improved livelihood options through tourism can help to reduce rural poverty. (iii) The risks and problems created by seasonality of tourism can be partly minimised in rural tourism because of availability of non-tourism related activities in rural areas as adjustment options. (iv) Promotion of rural tourism will also mean imparting modern skills and capabilities to rural workers. (v) Since several nature, culture, and ritual-based tourism attractions are located in rural areas, the growth of rural tourism will help rural people to promote and protect these resources.

Two cases of rural tourism in Tibet

Rural tourism in Tibet started in 2002 and is guided by local government. We present here the experiences of two successful cases. One relates to Gongzhong village in Linzhi Prefecture; and another relates to Samu village in the vicinity of Lhasa City. Limited companies of rural tourism have been formed in both villages. The way of life of villagers, unspoiled environment, and historical culture and customs of villages are the key tourist attractions. The farm products and handicrafts constitute merchandise for the tourists. Roads, public toilets, and so on are built by government aid. The investment in service facilities is provided by the company. Villagers as workforce

participate in tourism activities under the guidance of the company. The Tibet Tourism Board (TTB) and its branches are in charge of training villagers. Villagers benefit from tourism by earning wages, development of village infrastructure constructed by the company using a part of the tourism income and aid to the poor population not involved in tourism activities.

Samu village began its tourism business on May 1st, 2002. Since then 3,000 domestic and foreign tourists have visited this village. They are attracted by the beautiful environment, folk customs, authentic folk food, well-regulated management, and folk culture especially a stage-show consisting of over 30 programmes of songs and dances which are composed, directed, and played by inhabitants. This village has 68 families with 303 persons depending historically on farming. In 2002, 29 families, and 33 people participated in the rural tourism business. Average income of each family was 1,145 yuan RMB each month, which was equal to the total annual income during the last year. The total direct tourism income in this village was nearly 70,000 yuan RMB, excluding the income from sale of merchandise to tourists. In the past there were only 10 persons working outside the village, earning cash income of less than 10,000 yuan RMB in total. Now tourism has become the main source of cash income in the village. Most importantly, a rural development foundation has been set up in the village to help extremely poor families. Rural tourism is welcomed and supported widely by villagers.

Conclusion

i) Tourism resources and constraints to exploiting them are much greater in poor areas than in developed and richer areas. Besides, the approach to tourism development has to be different in poor areas. Rural tourism is one potential step for addressing the problem of poverty.

ii) Not every kind of tourism has obvious effects on alleviating poverty. Hence, alleviating poverty while promoting rural tourism needs systematic integration of components promoting tourism and enhancing poor people's income.

iii) Based on gains identified, rural tourism should be one of the strategic measures for sustainable regional development in Tibet.

Chapter 13

Tourism as an Instrument for Area Development and Poverty Alleviation with Focus on Nepal

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Introduction

Tourism in the beginning of the twenty-first century was described by Frangialli, the Secretary General of the World Tourism Organisation (WTO), as the biggest industry the world has ever seen (Frangialli 2000). In 2001, which was not a good year for international tourism, international tourist arrivals totalled 692.7 million and international tourism receipts 462.2 billion USD. The annual average growth rates for arrivals and receipts for the period 1995-2001 were 3.8 and 3.1%, respectively (WTO 2002a). South Asia's tourism receipts were only 1% of this total. WTO's study Tourism: 2020 Vision predicts that by 2020 international arrivals will reach 1.5 billion with tourism receipts above 2 trillion USD (WTO 2000). Tourist arrivals are predicted to grow by an average of 4.3% a year, while receipts will grow by 6.7% a year over the next two decades. If the market share of mountain tourism remains at 15–20% of total receipts, this will translate into 300 to 400 billion USD in the next 20 years, and this does not include domestic tourism! In the South Asian mountain context, in general, and Nepal in particular, tourism, in spite of its fragility as an industry as witnessed in the aftermath of 9/11, has a huge potential to generate income and employment. It provides an opportunity to partake of the fastest and the most dynamic economic sector the world has ever seen. Global financial institutions view tourism as the most lucrative export strategy. While there is another side to this view (de Chavez 1999), the lure of tourism as a development strategy is real. In spite of inevitable ups and downs, globally speaking tourism is a very resilient industry.

Whether understood as a pronounced deprivation in well-being (World Bank 2001) or a state in which people cannot secure minimum standards of well-being and have limited or restricted choices and opportunities for a tolerable life (UNDP 1997), poverty characterises mountain areas in

general, and the degree of poverty is more intense in the loftiest of all mountain ranges, the Himalayas. Several factors and processes have contributed to poverty in the mountains. Limited asset base, low levels of education and health, limited access to social infrastructure, limited skill capabilities and opportunities, lack of capacity to withstand shock, lack of autonomy in decisions and actions, powerlessness, vulnerability, exclusion, and lack of participatory institutions and organisations are some factors associated with poverty. Physical conditions and processes, such as remoteness, inaccessibility, and lack of adequate resources and access to means of sustainable livelihoods, have reinforced conditions of poverty (Papola 2002). There has also been growing pressure on environmental resources for the basic necessities of survival. The traditional processes of adaptation have been breaking down or have been made irrelevant by the processes of globalisation and liberalisation. The challenges of creating sustainable livelihoods in the Himalayas have never been so critical, nor the search for alternatives so urgent. This is where tourism makes an appearance in the development agenda of the countries of South Asia.

Tourism is attractive to poor mountain economies because it is one activity where constraints to development—remoteness, difficulty of access, natural and biological diversity, pristine natural beauty, insular cultures and ways of life—can be transformed into opportunities. Its backward and forward linkages, if properly managed, can enhance employment opportunities in tourism and related sectors. Since sustainable tourism depends on a sound environment, tourism has also been seen as a sector that promotes environmental restoration. As the linkages of tourism and development are explored both in its spatial and in its economic manifestations (Sharma 2000a) the realisation that tourism itself can be a development intervention with area-specific implications has begun to dawn on policy-makers and politicians. Tourism is a growing industry affecting millions of the poor. Though benefits may not directly affect the poor, the costs they face can be reduced. For countries where poverty alleviation is the singular challenge of development, the nexus between poverty alleviation, tourism, and development has been a matter of intense interest.

This paper examines the implications of tourism for area development and poverty alleviation in general, and looks at Nepal in particular. The following section provides a framework for analysing the linkage between tourism, area development, and poverty alleviation. The third section looks at the types of tourism in the HKH, and their implications for poverty processes. The fourth section examines the implications of tourism for poverty alleviation and area development with examples from Nepal, and reports on two specific initiatives to relate tourism development to poverty

alleviation. The final section provides a summary of issues that need to be addressed if tourism is to be a vehicle of poverty alleviation and mountain development.

Tourism, poverty alleviation, and area development: framework for analysis

In recent decades tourism—ecotourism, sustainable tourism, community-based tourism, responsible tourism, and the like—has been promoted as a win-win situation in which tourism contributes to environmental conservation as well as the well-being of the local population. The well-being of a population and communities is often mentioned in different formulations and perceptions of tourism. Ecotourism has been defined as "responsible travel to natural areas that conserve the environment and sustain the well-being of local population" (Ceballos-Lascurain 1996). Sustainable tourism broadly describes all types of tourism that contribute to sustainable development, a major component of which is that host communities should invariably benefit if tourism is to be viable and sustainable in the long term. Community-based tourism promotes initiatives of communities, the distinguishing feature being that the tourism agenda is set by the community so that there is a wide sharing of benefits (MF/TMI 1999). These different formulations emphasise the linkage between tourism and local economic development. The linkage with poverty alleviation is perhaps there but remains only remote. Recently deliberate attempts have been made to incorporate poverty alleviation in tourism development policies and programmes in developing countries, in general, and in South Asian mountain economies in particular. At the Johannesburg World Summit on Sustainable Development, the World Tourism Organisation vetted a report arguing that the cornerstone of sustainable tourism is the well-being of poor communities and their environment. The report reviews current experience in tourism and poverty alleviation, identifies the contribution that tourism can make to the elimination of poverty, and to that end recommends the actions required from government, the tourism industry, development agencies, and local communities (WTO 2002b).

Pro-poor tourism

Tourism as an activity is concerned with pleasure, adventure, entertainment, pilgrimage, or the desire to experience other environments and cultures. It is an activity of the relatively well-off. There are therefore obvious limits to the extent that tourism can be made pro-poor. But it has been argued (DFID 1999) that, compared to other economic sectors, tourism offers definite advantages for pro-poor growth. First, tourism is an in situ export in which the customer comes to the product rather than the other way

round. There are opportunities for additional sales from economic activities that would benefit the poor. Second, tourism can be relatively labour intensive, and also employ a higher proportion of women, because of the high proportion of low-skill, domestic type jobs. Third, many areas in poor countries have competitive advantages for tourism, which is not the case with many other exports from poor countries. Fourth, tourism products can be built on the assets of natural resources and culture that some poor areas have. Finally, tourism can enhance the environmental resources upon which most of the poor depend. This can particularly be the case in many mountain areas.

There are also processes imbedded in tourism that can work against the interests of the poor. The high import content of tourism products, disproportionate concentration of tourism revenues among urban-based travel and tour operators, increased dependency on the outside, negative social impacts including sexual exploitation of the poorer sections of the population, and the possibility that negative impacts can be so powerful that the host community will succumb to a variety of alien cultural influences are some of these processes.

Studies carried out in the mountain areas of the Hindu Kush-Himalayan region indicate that the central development concerns in the mountains—poverty alleviation, environmental regeneration, and empowerment of local communities—are not spontaneous processes but need to be deliberately planned and managed through an effective partnership with all the relevant stakeholders (Sharma 2000a, Shah and Gupta 2000). Tourism does not become spontaneously pro-poor. A variety of factors affect the economic participation of the poor in tourism. Ashley et al. (2001) have identified a number of tourism issues affecting the poor. Tourism thrives only in locations that have the advantage of quality tourism products (environment, heritage, culture, and other attributes) and infrastructure. Access of the poor to the tourism market needs to be assured. The poor need to have access to human and financial capital to engage in commercially viable activities that derive from tourism. The policy and regulatory framework of tourism in terms of land tenure, planning process, and the attitude of the government has to be sensitive to the needs of the poor. Government or NGO support is necessary to build on the social capital and organisational potentials of the poor. Barriers that inhibit the participation of the poor in tourism have to be addressed, while at the same time the wider concerns of the poor (such as reduced competition for natural resources, minimised trade-off with other livelihood activities, using tourism to create infrastructure for the poor) have to be incorporated in decision-making (Ashley et al. 2000). Nothing less than a multi-level, participatory, and

proactive strategic intervention is required for tourism to become pro-poor (PPT 2002).

Pro-poor tourism is tourism designed and managed with a view to benefiting the poor. Although experience in this area is quite limited, generally it can lift some of the poor from income poverty, can act as critical gap fillers for some of the poor, and (as the experience in community-based tourism suggests) it can enhance the access of the poor to information and infrastructure. But pro-poor tourism has to be nurtured at different levels through a variety of strategic policies and programmes, and through active involvement of the key actors and stakeholders—the government, non-governmental organisations, the private sector, community organisations, and the poor themselves. While government can create the policy environment and initiate strategic programmes to facilitate pro-poor tourism, non-governmental organisations can play a catalytic role in organising and facilitating the poor to recognise and take advantage of emerging opportunities, and in promoting their participation in local tourism planning. Community organisations can play a critical role in ensuring that communities (including the poor) derive sustained benefits from tourism development through their control over tourism resources. The private sector can directly forge partnerships with the poor, particularly in product and market development and in ensuring that opportunities identified for the involvement of the poor are commercially viable.

Figure 1 elucidates the framework for analysing the linkages among tourism, poverty alleviation, and area development. Tourism can have a positive impact on poverty alleviation if it enhances employment and income opportunities, if it provides avenues for building the capabilities and assets of the poor, if it is accompanied by a process which favours empowerment of the poor in terms of participation in decision-making, and if it facilitates resource sharing through the expansion of community infrastructures. Similarly, tourism can positively impact area development through the motivation it provides for location-specific economic activities and trade, through increases in the level and quality of services and infrastructure, through the impetus it provides for the development and conservation of local natural and cultural resources, and through the growth of settlements that can function as central places and markets for agricultural and other goods produced locally and regionally.

However, for such positive impacts to occur, a number of mechanisms and systems need to be in place. The impact of tourism on poverty is mediated, among other factors, by the extent to which government policies and regulations are pro-poor, the extent to which the poor have access to human and financial capital, the extent to which the capabilities of local

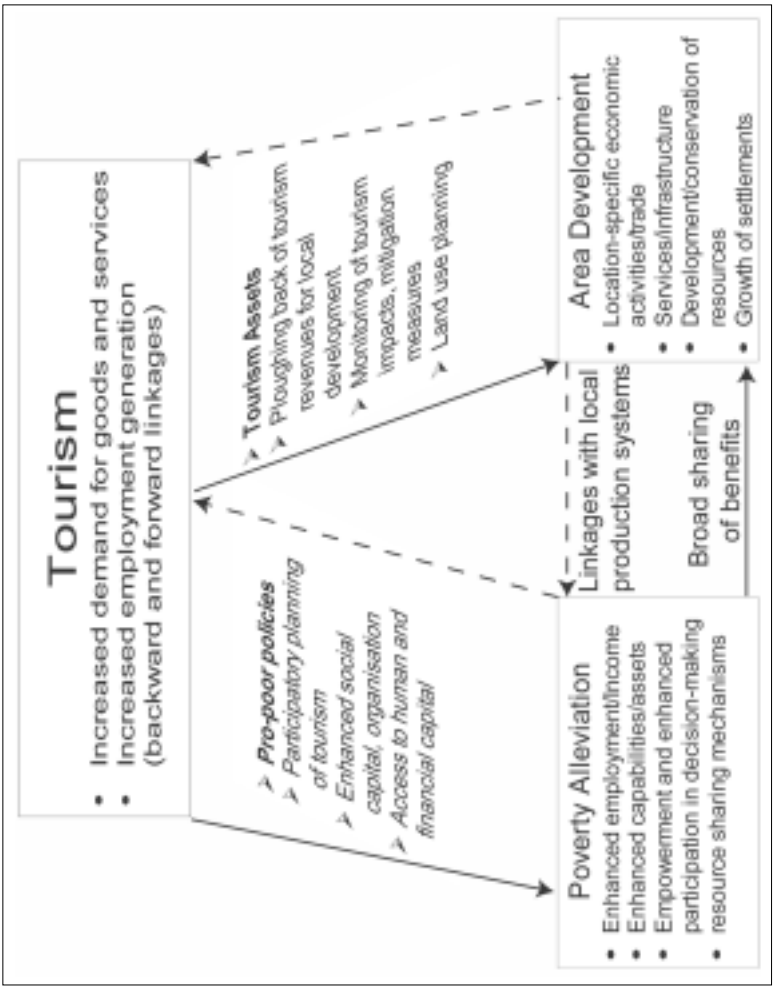

Figure 1: Tourism, poverty alleviation and area development

poor are enhanced through training and so on, by the extent to which the poor have a say in local-level tourism planning, and by the support existing for building up the social capital and organisation of the poor. Similarly, the linkage of tourism with area development may be contingent on the type and quality of tourism assets in the area, the extent to which tourism revenue is ploughed back for the development of community infrastructure, considerations of land-use planning, and the efforts made in monitoring of tourism impacts and measures taken to mitigate negative impacts, among others. The relationship between poverty alleviation and area development is basically expressed in tourism-induced linkages with local production systems and the mechanisms that support broader sharing of tourism benefits, in terms of both public goods and expansion of private opportunities.

Tourism in the Himalayas: Implications for Poverty Alleviation and Area Development

The implications of tourism for poverty alleviation in the Himalayas are not spontaneously positive. Mountain areas in general require a sensitive approach to tourism for various reasons. Inaccessibility and remoteness dictate that local capability and support systems need to be developed for mountain areas to be net beneficiaries from tourism. Since mountain areas in general tend to be scale-sensitive, the scale of tourism has to be commensurate with the carrying capacity of the area. The linkage of tourism with environmental conservation needs to be strengthened. Tourism has to be sensitive to agro-pastoral systems and resource management regimes. Employment and the market potential of traditional activities and crafts have to be explored. As the resource attributes differ from area to area depending on aspect, altitude, and so on, multidimensional institutions and technology options need to be explored in their relationship to the needs of tourism. Mountain areas are politically and economically marginal. Increased dependency, unequal terms of exchange, and gradual loss of autonomy over the resource use have been the manifestations of marginality in the mountains (Jodha 1991). As a result most proceeds from mountain tourism go to the plains and urban-based agencies. A number of institutions and processes are deemed necessary to reverse the marginalisation of mountain communities. These include participatory local institutions to promote tourism that contributes to local development and to defend the interests of the community, mechanisms for mandatory reinvestment of resources, and creation of conditions so that mountain people become the net beneficiaries of tourism development. Once the tourism agenda addresses the issues of mountain development, conditions can be set for examining processes that identify ways to address poverty.

The linkages of tourism with poverty alleviation and area development depend to a considerable extent on the nature and type of tourism. In the Hindu Kush-Himalayan region, four types of tourism are prevalent: trekking, mountaineering, and related adventure travel; resort tourism; tourism based on cultural experience and sightseeing of historic and cultural sites; and pilgrimage tourism. Table 1 shows the implications of different types of tourism for poverty alleviation and area development. The potential for poverty alleviation appears relatively greater in trekking and mountaineering because poverty is much more entrenched in rural areas in general and the mountains in particular. However, current employment opportunities are limited to portering and menial employment in teahouses. In areas which have the benefit of resource sharing, such as the Annapurna area in Nepal, tourism can also contribute to development of public infrastructure (trails and bridges, drinking water, schools and health posts, and so on) and training of human resources from which the poor can benefit.

Culture tourism based on heritage sites and in urban areas can also provide some opportunities for the poor, but these depend mostly on construction, sale of handicrafts, and indirect employment opportunities in transportation. In areas with resort or pilgrimage tourism, the poor could actually suffer due to migration of outsiders who buy land from the poor at low prices and benefit from the eventual growth of tourism.

All types of tourism have implications for area development in terms of physical growth of settlements, growth and expansion of functions, and environmental problems that may be associated with tourism. Resort tourism in particular can lead to 'enclave' development in which the impact of tourism on the local economy is insignificant.

Tourism, poverty alleviation, and area development in Nepal

Characteristics and trends of Nepal's tourism

Although tourism in Nepal has been in the doldrums for the last few years, it grew quite rapidly up until the year 1999. Table 2, which provides tourist arrival data for selected years, shows that the average annual growth rate of international tourism was over 12.6% from 1962 to 1999. Between 1999 and 2001 there has been a conspicuous decline in tourist flow, and it may take some time before a reversal of this trend takes place.

In 2000 over 55% of the tourists to Nepal came for pleasure and sightseeing. Just over 25% came for trekking and mountaineering, of which 64% went to the Annapurna, 23% to the Everest region, 9% to Langtang–

Table 1: Types of tourism and implications for poverty alleviation and area development in the Himalayas

Trekking/Mountaineering	Resort Tourism	Culture Tourism	Pilgrimage Tourism
Poverty Alleviation • Employment opportunities as porters, mule drivers in transporting tourist provisions; some employment in tea-houses, lodges • Development of community infrastructure in areas benefiting from resource sharing • Competition for firewood, timber • Inflation; increased dependency	Poverty Alleviation • Some local employment during construction; menial jobs • Resort tourism based on natural preserves has potentials for providing sustained employment/income opportunities • Some demand for local agri-cultural/livestock produce • Changes in land ownership; loss of resources by the poor • Social aberrations, exploitation	Poverty Alleviation • Mostly urban or heritage based, no impact on the rural poor • Some direct impact on employment in construction, sale of handicrafts/souvenirs • Indirect impact due to jobs created in sectors that serve the tourist industry such as transportation • Some employment due to the revival of traditional crafts in which the poor engage • Increased dependency	Poverty Alleviation • Traditional pilgrimage based, frugal living, so little pressure on local economies • 'Mass' tourism induced by easy access dependent on imports • Business and trade owned by outsiders, changes in land ownership • Some income from sale of local crafts, religious produce
Area Development • Settlement and infrastructural growth along trails • Increase in variety and quality of goods and services • Some impact on production regime due to tourist demand • Environmental degradation in areas without benefit of management • Dependent development	Area development • Development of road • Infrastructure • Potentials for sustained • Linkages with the production • Regime • Enclave development • Environmental problems (sewage, solid waste, slope failures, land use, sprawling • Growth of resorts, etc)	Area Development • Accelerated and mostly unmanaged urban growth • Increased pressure on infra-structure (bottlenecks in traffic, water supply, sewage, solid waste, and related problems) • Expansion in services • Heritage conservation under favourable conditions	Area Development • Increased seasonal economic activity based on migrants • Seasonal pressure on infrastructure • Settlement growth often at the cost of religious symbolism

Table 2: Tourist arrivals and purpose of visit, selected years

Tourist Arrivals		Purpose of Visit (%)				
Year	Total	Holiday/Pleasure	Trekking & Mountain-eering	Business	Pilgrimage	Other
1962	6,179	--	--	--	--	--
1970	45,970	91.1	1.2	2.0	-	5.7
1980	162,897	80.2	11.8	3.4	-	4.6
1990	254,885	63.5	15.7	4.6	-	16.2
1999	491,504	59.2	22.0	4.8	3.9	10.1
2000	463,646	55.2	25.6	6.4	3.4	9.4
2001+	365,477	56.6	23.2	5.9	4.0	10.3

Source: MoCTCA (2000). Nepal Tourism Statistics 2000 **
+ estimated in MOF. Economic Survey 2001/2; -- classification not available

Helambu, and 4% to other areas. About 81% came by air, and the average length of stay was 11.9 days. Almost 58% were between the ages of 16 and 45, and about the same percentage were males. One-third of tourist arrivals were from western Europe. Japan (8.9%), USA (8.7%), U.K.(8.1%), and Germany (5.7 %) were important countries of origin of tourists. About 21% were Indian. Indian tourists arriving by land are not recorded. In terms of seasonality of arrivals, 34% were in the months of September–November, while 28% came in February-April. Foreign exchange earnings from tourism stood at USD 168 million—12.9% of all foreign exchange earnings in the fiscal year 1999/2000, and 3.1% of the GDP.

Estimates based on recent research by the World Travel and Tourism Council for 2002 (WTTC 2002) show that the tourism industry will account for 3.8% (401,000 jobs) of all employment in Nepal, while tourism economy employment is estimated at 6.8% of total employment (715,000 jobs). WTTC estimates that in the next decade the travel and tourism demand in Nepal will grow by 5.8% per annum. The WTTC also estimates that the contribution of the travel and tourism economy to the GDP in Nepal is about 6%.

Tourism and poverty alleviation linkages

Poverty is endemic in Nepal. Using the Nepal Living Standards Survey data, the NPC estimated that the incidence of poverty in Nepal was 42% in 1995/96 (poverty line estimated at NRs 4,404 based on per capita calorie requirement and a factor of non-food expenditure). This incidence was higher (56%) in the mountain districts than in the hill districts (41%) and the Terai districts (42%). In the mid-western and far-western regions

of Nepal, poverty is estimated to exceed 70%. Poverty in Nepal is more a rural than an urban phenomenon. The incidence of poverty in rural Nepal was 44%, compared to only 23% in urban areas. Only about 14% of Nepal's population is urban. If the international 'one US dollar a day' poverty line is used, then the incidence of poverty in Nepal is estimated to be 53%.

Nepal Human Development Report 2001(UNDP2002) has estimated that applying the Human Poverty Index (based on illiteracy, malnutrition among children, early death, poor health care, and poor access to safe water) to poverty in Nepal gives a 39% rate, with the mountains having the highest incidence (46%). Again, poverty is higher in rural (41%) than in urban areas (24%).

No studies in Nepal provide a picture of the national economic impact of tourism disaggregated by sectors and regions. We can therefore only make some generalised comments on the issue. Only about 25% of the tourists in Nepal visit rural areas in the central and western hill-mountain regions, and a large proportion of pleasure and sightseeing tourists do not go beyond the Kathmandu–Chitwan–Lumbini/Pokhara triangle. This suggests that tourism is not common in the poorest regions of the country. The impact of tourism on the livelihoods of the poor, except for portering and tea-houses along trails, is scant and indirect. Further, about 55% of trekkers are in groups, and 45% are free independent trekkers or FITs. Group trekking is a centralised, organised affair in which trekking agencies supply most of the group's needs, and most of the benefits accrue to these urban agencies and suppliers rather than to rural areas. Only the budget trekkers contribute to rural economies, since all their needs are met by lodges and suppliers of other facilities on the trails. Under such conditions only a few poor individual entrepreneurs can possibly benefit from tourism. The poor generally are not aware of the opportunities tourism gives them. They lack organisation, training and credit support, and a pro-poor policy and programme framework from which they can benefit. Even in the Annapurna Conservation Area Project (ACAP)—a pioneering effort at making tourism environment and community friendly—except for the Ghalekharka-Sikles eco-tourism initiative, special efforts to organise and empower the poor are absent, and many of the opportunities provided by ACAP programmes are taken advantage of by the more affluent, with the poor and disadvantaged generally remaining outside the ambit of benefit.

A study in the Ghandruk and Ghodepani areas of the Annapurna trek notes that "many of the benefits from tourism go primarily to the small percentage of villagers who are lodge and restaurant owners. Porters,

guides and support staff often share in them, whereas the large percentage of subsistence farmers, specially of the poor lower classes do not directly benefit from tourism income" (Banskota and Sharma 1995, p. 106). The study estimates that among lodge owners as much as 50% of the money spent by tourists is retained locally. The regional economic significance of tourism is noteworthy. Banskota and Sharma (1997) estimated that a total of USD 3.8 million was accruing from tourism in the Annapurna region, including ACAP revenues from trekking permits, 26% of which was lodge-related earning.

In certain locations, such as Namche Bazaar on the Everest trek, tourism has induced a large-scale involvement of the local population. A survey in 1996 revealed that tourism-related activities provided the main source of income for 78% of the households. Some estimates show that revenues gained from tourism account for around 90% of the income of Khumbu, a feature similar to the European Alps (Nepal et al. 2002). In such situations the poor definitely benefit. Nepal reports that a survey of porters at the entrance gate of the Sagarmatha National Park for a 12-month period in 1996-97 registered 13,389 entries related to trekking, 14,279 merchandise porters, and 2,645 guides. The porters came from 17 districts, a high proportion from Solu and adjoining districts. Since the Khumbu Sherpas have moved up the income ladder, they do not normally work as low altitude porters. In Khumbu even the local agricultural work is undertaken by migrant workers, mostly from southern Solu. A comparative study of lodge-generated employment in the Khumbu and the Annapurna circuits showed that an average lodge generates 3.4 and 4.3 full-time jobs, respectively. Nepal et al. (2002) reported that 32.5% of employees in Annapurna and 27.7 % employees in Khumbu were outsiders and, in both cases, over 40% of the employees were women. An untrained lodge employee can make 6,000–16,000 NR per tourist season; a trained cook between 20,000–30,000 NR, and a porter can make up to 25,000 NR per season (in 1997, 1 USD = NR 60.20). So the potential for increasing incomes from tourism-related jobs is considerable. However, such potentials have been realised in only a few locations.

Tourism and area development linkages

Tourism has induced the development, expansion, and reorientation of settlements along trails and tourist destinations. This has been most remarkable in the Annapurna and Khumbu areas. On the Everest trail alone, 20 settlements have either emerged or grown directly as a result of tourism. These include settlements that have emerged solely due to tourism, temporary settlements that became permanent due to tourism, and settlements that are experiencing recent lodge development (Nepal 1999).

As a result the functional nature of settlements has undergone tremendous changes. Many now have communication linkages with the outside world, and the variety of services they provide has also increased. Also, in the Khumbu, tourism has contributed to a resurgence of trade with Tibet.

The dramatic development of lodges along settlements in the Annapurna circuit and Khumbu area is shown in Table 3. The number of lodges in the Annapurna went from 45 to 518 between 1980 and 1998, and the number of settlements with lodges increased from 29 to 84 during the same period. The case in Khumbu was similar.

Table 3: Lodge and visitor development, Annapurna and Khumbu

Year	Annapurna*			Khumbu**		
	No. of Tourists	No of lodges	No. of settlements with lodges	No. of Tourists	No of lodges	No. of settlements with lodges
1980	14,300	45	29	5,836	17	12
1990	35,800	203	69	7,950	75	29
1997/98	54,100	518	84	18,200	225	38

* data for 1998, ** data for 1997
Source: Nepal et al. 2002, Box 14.

Namche Bazaar (3,440m), the tourist hub in the Khumbu and a day's march from the airport at Lukla, exemplifies the impact of tourism-induced growth. The built-up area of Namche Bazaar doubled between 1955 and 1997 (Nepal et al. 2002). The first hotel in Namche opened in 1971. In 1997 there were 33 lodges with a total of 800 beds within the built-up area. From a sleepy settlement barely 30 years ago, Namche now exudes an urban, cosmopolitan touch with a large number of shops offering a range of imported goods, German and Swiss bakeries, laundry service, video halls, and internet cafes.

In the Jomsom-Marpha area of the Annapurna circuit, the linkages between tourism and area development are vividly exemplified. Four years ago Jomsom was visited by about 18,000 trekkers annually. Jomsom is accessible by air but does not have a road connection. The nearest road is 4-5 days away by foot. Lying on the northern side of the Great Himalayan Range, the area has insular conditions with very little cultivable land. During the last two and a half decades the area has been a major attraction for trekkers, which has promoted a range of economic activities including lodge and tea-house operations, apple and apricot farming, vegetable

farming, cottage crafts, and mule transportation. These activities provide income and employment opportunities to many households in this food-deficit region. Once an area of out-migration, now it attracts investors from outside. Jomsom and neighbouring villages are some of the richest areas in the highlands. These settlements also have developed as regional service centres. Government support led to the establishment of a horticultural farm in the 1960s; and the formal and informal institutions for conservation, tourism, and development initiated by the Annapurna Conservation Area Project (ACAP) since the 1980s, and the multiple linkages of tourism with the local production base, are among the factors that have contributed to development of the Jomsom-Marpha area.

Not all such developments have been positive. The supply of lodges in many areas (such as Namche and Lukla on the Everest trek and Ghandruk on the Annapurna trek) has outstripped demand. Such settlements have oriented towards tourists, and the needs of the local population remain ignored. Rustic trails have been transformed into strings of lodges. Vernacular architecture is fast disappearing. Inflation has made life difficult for the local and regional population who do not depend on tourism. Jomsom-Marpha is a success story because of the tourism–local production linkage. Such linkages do not exist in many other areas.

The experience of Nepal suggests that spontaneous alleviation of poverty through tourism is an exception rather than the rule. Pro-poor tourism has to be deliberately planned and nurtured, keeping in mind the needs and capabilities of the poor. Tourism cannot address the structural roots of poverty embedded in unequal access to or control over resources. With appropriately designed and executed policies and programmes, it can at best provide a niche for the poor in providing goods and services to tourists, and in the process enhance their standard of living.

It would therefore be interesting to review two particular initiatives in pro-poor tourism that are underway in Nepal. Conceived and implemented as donor-funded projects, the sustainability of these initiatives is open to question.

SNV's experience in pro-poor tourism in Humla, far-western Nepal

Bordering Tibet in the north-western corner of Nepal, Humla is perhaps the remotest district in the country, a full 10 days' walk from the nearest road head. An airstrip connects Simikot, the district headquarters, to the outside world. Over 90% of the land area of Humla has slopes exceeding 30°. Less than 1% of the land area is arable. Humla is one of the poorest

districts in Nepal, with poverty so pervasive that by '$1 a day' international standards over 90% of the population is poor (Seville 2001). SNV has been working to improve the infrastructure of Karnali Zone since 1985. In 1993, with the implementation of the District Partners Programme (DPP) which ended this September, work focused on three interrelated components: local governance, social mobilisation, and economic opportunities. The aim of the local governance component was to build capacities of local government bodies and NGOs. A local trust fund is established for local development initiatives. The social mobilisation component is run by four partner NGOs. These encourage and assist the community-based organisations in analysing, planning, implementing, and monitoring development programmes. The economic opportunities' component builds on the first two and facilitates a process in which the poor, disadvantaged groups, and women can benefit from economic opportunities (Saville 2001).

The pro-poor sustainable tourism initiative in Humla that started in 1999 was built on the DPP process. It covered the main tourist attraction in Humla—the Simikot-Hilsa trail (about 70 km, from district headquarters at Simikot to the Tibetan border at Hilsa) to Mount Kailash and Lake Manasarovar (areas of pilgrimage for Hindus and Buddhists and also attractions for western trekkers). Trekking trails (all above 2,500m) are in good condition, and camping sites exist along the trail. In 2000 around 700 tourists walked the trail, mainly in organised groups; numbers since then have declined due to the Maoist insurgency.

Substantive activities related to tourism began through social mobilisation of poor people in groups or community-based organisations. This was undertaken through local NGOs, which supported CBOs in defining local tourist potentials and awareness of tourism impacts—economic, ecological and social, situation analysis, appreciative participatory planning exercises (APPA), group strengthening, and action and reflection including business planning. APPA is a methodology combining participatory action research and appreciative planning that encourages and facilitates the villagers to Discover (seek positive assets), Dream (envision a future), Direction (identify potential activities), Design (prioritise activities and plans), and Deliver (implementation/action). Once the groups select their activities, support is provided for small-scale enterprise development, employment generation, and market linkages. To enable potential entrepreneurs to take advantage of enterprise development support, the CBOs can supply training packages like feasibility studies and business plans. The venture capital fund for group members provides loans of up to NR 50,000. Priority is given to economic activities that employ poorer people and women.

By early 2002, 27 community-based groups were active along the trail. Five community camping sites were functional, as were portering services. Sanitation and hygiene along the trail has been improved considerably, with about 400 toilets built by community groups for their families. Exposure visits have been organised to other tourist areas in Nepal. An integrated tourism and transport plan has been developed. Almost all community groups have taken to vegetable farming so vegetables can be locally purchased by tourist groups.

The enterprises promoted under the programme are not exclusively related to tourism, but often have a larger local market—such as vegetable production, poultry and small livestock raising, opening tea shops along the trail, etc. Twenty-six business plans have been approved for loans from the venture capital fund. Thirteen have already repaid their loans in a year in spite of the declining number of tourists.

On the Simikot-Hilsa trail portering is more organised. After the improvement of the trail, local businessmen have bought mules and horses to use as pack animals. In 2000, 40–50 pack animal drivers were employed. In non-tourist seasons the pack animals are used to transport construction material. All tourists are required to pay a USD 2 tourism tax, which goes to the community development activities of the district development committee (Hummel 2002).

Things have not gone according to plan in the last two years because of the Maoist insurgency and consequent problems of security and decline in the number of tourists. It was expected that, by the end of 2002, a total of 400 poor households (2,600 people) would benefit from lodging and eating facilities, handicraft sales, camping sites, vegetable sales, cultural programmes and local tours, hot springs' management, and local portering services to tourists (SNV 2000). This is about 5% of the Humla district population and almost a third of the population affected by the Simikot-Hilsa trail. Tourism earnings would not amount to much elsewhere, but in the dire economic conditions of Humla they amount to the difference between a full meal and often a half-empty stomach.

Tourism for rural poverty alleviation project (TRPAP)

The overall objective of the Ninth Plan of Nepal (1997-2002) is poverty alleviation. The tourism component of the plan identifies the need to make tourism assist the process of poverty alleviation, to establish backward and forward linkages of the tourism sector with the national economy, and to extend the benefits of tourism to the village level. Pro-poor sustainable tourism is being viewed as a possible tool for poverty reduction

by many donor agencies in Nepal, including UNDP, ADB, DFID, and the Dutch Government (SNV). The TRPAP project, which started in March 2001, aims to contribute to alleviating poverty through policy and strategic planning for sustainable tourism development that is pro-poor, pro-environment, pro-women, and pro-rural communities (TRPAP 2000). The programme is designed to bring together poverty alleviation, decentralisation, and tourism development.

With an emphasis on policy and strategic planning for developing rural-based tourism, the TRPAP builds on SNV's rural tourism experience, and the experience of the Participatory District Development programme in decentralisation and social mobilisation. There are three major components of the TRPAP—empowerment and social mobilisation, strengthening backward and forward linkages, and creation of sustainable tourism platforms. As part of the social mobilisation process, tourism is used as a vehicle to help alleviate poverty and allow villagers to contribute and share in tourism development. Before initiation of the programme, the community makes a self-assessment of its potential through application of the 'development wheel', where the villagers score themselves on 14 different attributes grouped into community resources, land resources, and commercial resources. The appreciative participatory planning and action (APPA) and social mobilisation tools are used in working through the development wheel. The idea is to facilitate a bottom-up approach to decision-making and planning and to provide a sense of empowerment to communities. To assess progress, the development wheel exercise is conducted each year.

Strengthening backward and forward linkages is the second major component. The idea of backward linkages is to enhance linkages from tourism-related private sector businesses to communities and groups in the community. It is based on the products and services the local community can provide and sell to the private sector and tourists. The idea is to strengthen the multiplier effect so that tourism benefits are spread more widely. Operationally, backward linkages are strengthened through social mobilisation (tourism awareness on possibilities and constraints, awareness of the programme and tourism committees, tourism and gender relations),local business planning, and skill development. Forward linkages go from the local/village-level to national and international tourists and are concerned with marketing local tourism products and services to various stakeholders. Forward linkages are strengthened through product development and marketing, and through the support of sustainable tourism development committees.

Sustainable tourism platforms are institutions and formal/informal networks created at different levels (micro to meso to macro) to ensure that tourism is organised and developed so that the poor and underprivileged benefit from it and so that there is a sustained linkage between supply and demand. At the local level, CBOs and functional groups (FG) are created through social mobilisation and are comprised of individuals with specific business interests. These groups are trained to develop business plans that can be implemented and which can be funded from sustainable tourism development funds. To co-ordinate the activities of community development (such as sanitation, trails, drinking water, etc.) or specific skills (lodge management, local guide, etc.), Sustainable Tourism Development Committees (STDC) are formed. Similar structures are created at the district and national levels. Village Tourism Associates provide technical support at the district and village levels. Sustainable Tourism Development Funds at the village and district levels provide facilities for investment in pro-poor tourism activities. Strategy and tourism plans will be developed for each settlement in a participatory way, and these plans will be linked with respective conservation policies and plans. By the end of the project, TRPAP aims to establish functioning Sustainable Tourism Development (STD) Sections and STD Funds at the district level, STDC funds at the village level, and a Rural Tourism Development Division at the Nepal Tourism Board at the centre.

There are six pilot sites chosen for the programme in Dolpa (7 Village Development Committees around Shey-Phoksundo), Lumbini (7 VDCs), Chitwan (4 VDCs), Langtang (9 VDCs), Solukhumbu (15 VDCs), and Kanchenjungha (6 VDCs). The target areas were selected on the basis of criteria including the human development index for the district, gender empowerment measure for the district, tourism potential, number of tourists visiting the area, institutions working in the region, remoteness, etc. It is a five-year programme with funding from UNDP, DFID, and SNV with a planned budget of around 5.2 million USD.

Achievements of the TRPAP are not yet visible, and it is too early to comment on the possible outcomes.

Conclusions and issues for consideration

Experience in Nepal and elsewhere (Ashley et al. 2001) suggests that the link between tourism and poverty alleviation is not spontaneous, but there are opportunities provided by tourism that can increase the income, employment, and capabilities of the poor. However, pro-poor tourism is not a panacea for dealing with poverty-generating processes. It only provides some leeway for the poor to take advantage of opportunities

emerging from tourism and to deal with the negative environmental and socio-cultural consequences of tourism. In this sense pro-poor tourism is a worthwhile effort in orienting the impacts of tourism in desirable directions. Pro-poor tourism cannot be promoted in isolation, and the context in which it is promoted determines the extent to which it can be successful.

A number of conditions and mechanisms needs to be in place for tourism to be oriented towards the alleviation of rural poverty. A checklist of issues that have fundamental implications for policy would include the following.

- The context of decentralised and participatory governance. Commitment to decentralisation and perception of the government as an ally of the poor are basic conditions for facilitating pro-poor tourism. Empowerment of the poor does not happen in isolation. It is the creation of a political, legal, socio-cultural, and economic environment that facilitates, encourages, and enables the powerless (i.e., the poor) to influence policies, decisions, and actions on their behalf (Sharma 2002).
- Tourism asset (and type of tourism) and tourism product development that facilitates interaction with the poor. Trekking and pilgrimage facilitate better interaction than resort tourism, for example.
- Organising the poor to benefit from tourism development. An intensive process of social mobilisation where the poor are not only enthused but also see and share concrete benefits from opportunities opened by tourism. NGOs can play a catalytic role in facilitating this process.
- Participation of the poor in local-level decision-making. Participation of the poor may be impossible unless specific conditions are created to listen to their voices and facilitate their participation. This would entail the removal of barriers that inhibit participation of the poor. Such barriers may be created by gender inequality, social discrimination or exclusion, and unequal distribution of resources.
- Resource-sharing mechanisms and wider community benefits. The creation of community infrastructure can be possible only when some proportion of tourism-generated resources is reinvested in areas visited by tourists. This may be in the form of entry fees such as in the Annapurna or taxes such as in Humla. The creation of community infrastructure based on the priorities of the poor can be linked to tourism development and can also be a confidence-building measure.
- Promoting business opportunities for the poor that have a broad demand base. The poor are vulnerable to fluctuations in demand that can result from decrease in tourist numbers. A broad demand base can minimise risks.

- Training and building the capabilities of the poor in specific skills linked to business opportunities.
- Establishment of revolving funds to ensure access of the poor and disadvantaged to financial resources.
- Mechanisms for pro-poor partnerships with the private sector. Such partnerships can create the basis for a complementary relationship between demand from private-sector entrepreneurs and the supply of goods and services from poorer groups. Such partnerships can also expand employment opportunities for the poor.
- Market linkage and tourism platforms at micro-, meso-, and macro-levels. Pro-poor tourism, particularly the product development and marketing part, requires institutional platforms at different levels that support initiatives taken at the local level. Market links are often the weakest aspect of pro-poor tourism, and the poor themselves are least capable of strengthening this link.
- Land-use planning and environmental safeguards. As tourism develops, the spatial manifestation of such growth requires careful consideration. Participatory land-use planning in nodal locations is called for to ensure orderly growth of settlements and to ensure that environmental safeguards are in place and that the poor do not lose their meagre resources, or end up on the wrong side of the bargain.
- Linkage of tourism with local production base. Tourism planning has to take into account the potentials of the local production base. A positive link between tourism and the local production base provides a sustainable basis for area development.

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ANNEX I: TEN STEPS FOR WORKING WITH LOCAL COMMUNITIES ON TOURISM

Phase 1: Identification

Step 1 High Tourism Potential Area Selection (District or Park area) – collection of secondary data on:

- unique and supportive tourism resources
- available 'markers'
- number and types of tourists
- market opportunities and constraints

Step 2 Identification of potential tourism development areas and trekking trails – stakeholder analysis

Step 3 Participatory sustainable tourism inventory on potential trails and tourism development areas

- village site selection
- initial activities identified
- hiring economic[al]* opportunity staff for process facilitation and local NGO for social mobilisation and skill development

Phase 2 Feasibility studies

Step 4 Feasibility studies on:

- district-level tourism product elements, trail packages, and nodal points (multiple-use visitor centres), district-level activities
- sites level – first identified activities
- collection of market information for potential product elements and enterprises
- cost/benefit analysis

Phase 3 District level, village level, and business planning

Step 5 Establishment of Sustainable Tourism Platform

- stakeholder coordination and collaboration for district planning
- training at district level to DDCs, district-based NGOs, and SNV staff

* indicates that the [ ] brackets denote where an editorial deletion would have been necessary had the phrase not been a citation from a published document.

Step 6 District and trail development planning including

- land-use planning and zoning, limits of acceptable change
- multiple use visitor centres
- village level/sites planning (Appreciative Participatory Planning and Action)

Step 7 Training in business planning, organising entrepreneurs and CBOs through district-based NGOs:

- resource management strategy
- production strategy
- marketing strategy
- linkages with national trekking agencies; should result in agreements on tour itineraries, local services, and products

Step 8 Production and marketing skill training to entrepreneurs and groups (CBOs), entrepreneurship development

Step 9 Entrepreneur development and assistance to explore financial options

- implementation of business plans
- marketing through business or nodal points

Phase 4 Monitoring and evaluation

Step 10 Monitoring at different levels through individuals/CBOs, Sustainable Tourism Platform and SNV, and dealing with change

Source: Saville (2001)

Chapter 14

Agricultural Transformation in Mountainous Areas of China

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Introduction

For a long time agriculture has played an important role in the economy of mountain areas of China. Agriculture in mountain areas has supported the livelihoods of many people. However, the development of the agricultural economy in mountain areas is slow, and the living standard of the people is low. Hence, it is necessary to develop agriculture to revitalise mountain economies. This will require support for application of science and technology, improving social environments, and addressing regional specificities through appropriate policies and programmes.

Characteristics of China's mountainous areas and their economic significance

Distribution and types of mountainous land

In China, plains account for 36% of the land cover; and mountains, hills, and plateaux 64%. Areas below 500m account for only 25% of China's total land. High mountain areas with altitudes exceeding 3,000m account for 25% of the total land area.

Although the absolute extent of land resources in China is among the highest in the world, the per capita land is small. The population of China exceeded 1.2 billion in 1995, accounting for 21.5% of the world's population. The per capita arable land, forest land, and grassland are only 32, 14, and 33% of the world's per capita averages, respectively. The problem of a big population on small areas of land is a prominent feature in China.

Because of different climatic and regional environmental conditions, agricultural production varies greatly among mountainous areas. Crop production is mainly confined to hilly and middle-low areas, while areas with high altitudes are mainly used for livestock grazing and forestry.

Characteristics of mountainous areas

Agricultural productivity in mountainous areas is low in most regions of China. Because of limited transportation and information facilities, agricultural production in mountainous areas is basically subsistence-oriented. Most of these areas are still poor and are listed among the poverty counties designated by national, provincial, or autonomous region governments. However, for mountainous areas producing cash crops and non-polluting agro-products, economic output is maintained at relatively high levels. Most of these mountain areas are characterised by:

- poor access, high cost of mobility, and transportation difficulties;
- shortage of agricultural resources such as suitable land and water;
- low technological input and low yield of crops;
- poor infrastructure and lack of ability to combat natural disasters;
- low levels of education of local farmers;
- poor facilities in terms of energy and communications;
- traditional agro-production systems with lower yields.

Economic significance of mountainous areas

Not enough statistical information on the economy of mountainous areas is available. However, agricultural products from mountainous areas have gradually entered the market, and many products from non-polluting or low-polluting environments (i.e., organic products) are highly priced in the market. Many of these products, such as Chinese chestnuts, tea leaves, rare herbs, and edible fungi, as well as large amounts of wild plants and animal species, are found or produced only in mountainous areas. If all kinds of mineral resources and water resources were to be included, the contributions of mountainous areas to China's overall economy would be very high.

Transformation of agriculture in mountainous areas

The past economic development in mountainous areas, especially in rural areas, has been very slow. Agricultural production is largely backward and traditional, as illustrated by the practice of slash-and-burn in many parts of Yunnan Province. These labour-intensive agricultural production systems are not only low in productivity, but also cause great damage to natural environments. Irrational land cultivation has caused severe soil erosion in the Taihang Mountain areas, loess highlands, and Jiangxi's red soil areas. The Chinese government has paid significant attention to this issue and, since the early 1980s, has developed programmes such as 'forest protection in watershed areas in the upper reaches of the Yangtze

River' and 'eco-environmental restoration' by investing money and mobilising local governments for this purpose.

Modernisation of agriculture in mountainous areas

With social and economic progress, agriculture in mountainous areas is changing. Improvements in physical and social infrastructure (roads, electricity , communications, education and health services, etc.) are being made in remote mountainous areas. Electricity is supplied to most of the mountainous areas in China. Through satellite TV, local people's awareness of new opportunities, including agricultural technologies, has improved. In some areas, e.g., Liangshan Yi autonomous state in Sichuan and Lijiang River in Yunnan, people have benefited through Internet and expert systems for raising agricultural production. To increase both the level and the quality of products various modern facilities have gradually been extended to mountainous areas. Education for children and youth has been improved; the number of school dropouts has decreased.

Impacts of science and technology on mountain agriculture

Due to the improvement in infrastructure, ecological rehabilitation, and the development of a market economy, demands for inputs from science and technology in mountainous areas have increased. The improvements and changes range from new cultivars to balanced fertilisation, from water-saving technologies (such as drip-irrigation techniques) to bio-control or low chemical use in mountain areas. Production schemes involving 'forest and fruits in the upper hills, cereal and oil crops in the plains', rational planting of fuel forests, and biogas development leading to reduction in deforestation are other features of agricultural development in mountainous areas.

After more than 20 years' implementation of 'forest protection in watersheds in the upper reaches of the Yangtze River' and 'natural forest protection', soil erosion in the upper reaches of the Yangtze River has declined considerably. Slash and burn agriculture has been kept within limits. Upland rice cultivation is practised widely by people in the Lanchangjiang River valley. Production techniques such as film mulching, balanced fertilisation, and minimum tillage are accepted widely by small farmers.

Agricultural technicians are encouraging farmers to apply practical and useful techniques originating from both new research and development (R & D) and traditional farming systems; these are contributing effectively to local development.

Commercialisation of mountainous agriculture

The growth of market-led changes has helped to transform the primitive and simple agricultural production systems of mountainous areas. Trends towards commercialisation of agriculture through application of science and technology are quite visible. Due to the clean environment, products command high prices. Assisted with information and transportation, these local products reaching consumer markets contribute significantly to farmers' incomes.

Local farmers have greatly benefited from the development and popularity of Chinese traditional medicines, establishment of production and processing bases for Chinese herbs, and effective marketing of special medicinal products in both domestic and overseas' markets.

Application of food-processing technologies has further helped the economy of mountainous areas. Now local products are converted into value-added commodities such as carrot juice from Jimusaer, Xinjiang, and ±-linolenic acid with perilla produced in Pengshan mountain in Sichuan.

Organic and pollution-free agricultural products

In the context of rising worldwide concern for food safety, mountain areas have advantages due to the predominance of organic products and their pollution-free, non-chemical dominated production environment. If properly advertised and marketed, this is a potential source of significant income for farmers. The Chinese government has put great emphasis on this aspect in mountain areas. However, limited accessibility and poor links with rich consumer markets do reduce the potential gains to mountain farmers.

A related point is China's huge land area and rich tradition of indigenous medicinal systems. This offers vast potential for developing and harnessing herbs and other products. Mountain areas are the natural home for such herbal species. Many of them are domesticated and processed for market. This could serve as another area for promoting faster growth of mountain agriculture.

Application of modern technologies

The impacts and problems of technological application in mountainous areas

Routine agricultural technologies developed for the plains cannot be easily applied to mountainous areas due to the limitations of the environment.

Besides, it is difficult to popularise some technologies due to their high costs. Application of agricultural technologies is further hampered by poor transportation, communication, and information facilities.

With the improvement of transportation, communications, and education, technological innovations are slowly moving into mountainous areas. This is indicated by the spread of technologies such as detoxification of potato cultivation, cultivation techniques for Chinese herbs, rainwater harvesting and water-saving technologies, biogas development, nurseries for special tree species, and pastureland improvement techniques including bio-fencing, and so on. In response to market demand, technologies suitable for organic farming systems for tea, fruit, vegetables, etc. have also been applied in mountainous areas. In areas with better conditions, horticulture in controlled environments combined with fruit processing technologies has been developed. With the development of communication systems and community access to them, computerised agriculture and long-distance learning have also been introduced. However, this needs more government support.

Farmers' demand for and acceptance of technologies

To develop the economy and increase income, farmers are naturally eager to apply new technologies, but they do not accept these technologies until demonstration shows their advantages. It is therefore necessary to conduct both indoor training and outdoor demonstration experiments. The Chinese Academy of Sciences has established a series of agro-ecological experimental stations across China. These stations are involved in introducing new germplasm, water-saving technologies, balanced fertilisation, and controlled environment production through greenhouse techniques.

Poverty alleviation projects for mountainous areas

To eliminate poverty and reduce the economic imbalance between the east and the west, the State Council decided to systematically enhance investment and improve manpower capacities over a seven-year period beginning 1994. This programme focused on solving the food security problem of 80 million people. The State Council has designated this as 'State 8.7 Action Plan for Poverty Alleviation'. This is treated as a blueprint for poverty alleviation in China and forms a part of the national development strategy.

The distribution of poverty in China

Currently the distribution of poverty in China is characterised by localisation in terms of social groups and geographical areas. The poor population is

mainly distributed in ethnic minority areas, less accessible areas, previous communist revolutionary pockets, and remote areas in central and western China. Regionally, 62% are in western China, 32% in central China, and 5% in eastern China. Furthermore, the poor (in the units of villages and households) are scattered over 50% of the counties in China covering 9–20% of the Chinese territory.

Poverty alleviation policies in China

Poverty alleviation in China is mainly driven by the state social security system and government policies. It is carried out through development programmes at different government levels. The key policy for poverty alleviation is focused on capacity building for poverty areas through improvements in land productivity, infrastructure, public utilities, ecological rehabilitation, and training local people to use science and technology. These improvements have helped local farmers to develop market-oriented production systems suitable for their local conditions such as the combination of cropping, livestock, and processing. These programmes have significantly improved productivity and farmers' incomes.

Since 1986, China has formed working networks at state, provincial, and county levels involving 10,000 officials. During 1986-2000, the state governments allocated about 154 billion RMB for poverty alleviation projects, besides the local governments' investment. The central government also attracted 1.4 billion USD from the World Bank, the International Fund for Agricultural Development (IFAD), and the World Food Programme. The '8.7' programme of the central government is directed towards solving the starvation problem of the poor. At the turning of this new century, China has set out to secure food supply and moderate incomes for about 90 million poor people.

Causes of poverty and key tasks

Poverty in the mountains of China is mainly caused by harsh natural conditions and the non-enterprising attitude of the local population. Therefore the key steps for alleviating poverty include: (i) changing poor people's expectations and building their confidence; (ii) improving their education; (iii) improving local production and livelihood options; (iv) reorienting their production structure; and (v) helping farmers by enhanced capacity to develop market-oriented agriculture.

Multiple approaches to poverty alleviation

At present, different approaches towards poverty alleviation are being carried out at the national level. These include the association of a particular

poverty area with a particular government agency, co-operation between the west and the east within China, alleviation through export of workers from poverty areas to developed regions, and small credit programmes. There are also social programmes, such as the 'Hope Project', 'Golden Bridge Project', and volunteer donation. Small credit programmes have been successful in improving farmers' ability to gain more benefits through a market-oriented economy. Active participation of the local farmers in these programmes has contributed to the success of poverty alleviation initiatives.

Training programmes for poverty alleviation

The Ministry of Organisational Planning, the Central Committee of the Communist Party, the Ministry of Finance, and the Office of Poverty Alleviation of the State Council have jointly launched a nationwide training programme. It aims to train the directors of Offices of Poverty Alleviation of 22 provinces and 592 counties in the next five years. Training programmes will also be carried out for local women and ethnic minority officials. The state government will allocate about 18 million RMB for these programmes. In the meantime, training courses will be offered to local farmers and officials, mainly focused on state poverty-alleviation policies and science and technology.

Agricultural administrative affairs and community development

Administration and community

Rural administration in mountainous areas is relatively backward, particularly in the field of formal community culture and public science education; and this is exacerbated by the scattering of villages in these areas. In the last few years, with economic reform, rural administration has improved greatly with more active participation of local farmers. The openness of administrative and financial affairs has speeded up the changes in rural economies.

The improvement of rural administration has several aspects. The policy of 'farmer's self-administration' offers opportunities for farmers to participate in village-level affairs, closely related to their well-being. Through this, farmers' confidence in developing their local economy and rural democracy have improved gradually. Since poverty is closely associated with ethnic minority groups, this concept is well adapted to the 'autonomous administration' system initiated for ethnic minority populations across China, mainly in the central and western parts.

Establishment and development of collective agricultural systems

The establishment and development of a collective agricultural system were initiated by the market-oriented economy. This system is different from the collective system that prevailed during the early stage of the new China. The old system was characterised by collective working, sharing production materials, and working for hourly wages. The current collective system is based on specialisation and diversification of the workforce and is characterised by allocation of resources according to individual farmers' expertise and capacity in the production process such as land cultivation, storage, transport, and marketing and processing. Farmers have the freedom to choose positions suitable for them in this integrated production process, achieving higher overall efficiency in resource use and economic returns.

According to a survey by the Ministry of Agriculture, up to 1994 there were about 30,000 collective economic units at township level (64% of the townships in China); 670,000 at village level (84% of the total villages in China); and about 1.5 million below the village level (54% of the total rural working groups in China). At the operational level, there are three types of collective unit: (i) community-based family businesses; (ii) freely operated family businesses with minimal community support; and (iii) village-based collectively operated enterprises. After nearly 10 years of endorsement from different levels of governments, the rural collective system is developing rapidly; it is promoting the local economy through a chain of primary production, processing, storage, and transport-marketing units.

Impacts of agricultural changes on the rural labour market and environment

Due to the slow rate of urbanisation in poverty affected areas, there was a slight increase in farming population during the ninth five-year plan period compared to the eighth plan. In recent years, there have been trends towards workforce migration from rural to urban areas due to declines in agricultural prices and decreases in farm income. A survey by the Ministry of Agriculture in 13 provinces showed that in 2001 the out-migrated workforce accounted for 23% of the total workforce. Within this, inter-province out-migration accounted for 46%. Since 1997, income from out-migrants made a major contribution towards the incomes of the poor, particularly in the central and western parts of China. The transfer of the farming population to the non-agricultural sector is an effective step towards promoting urbanisation, improving farmers' living standards, and improving the structure of the regional economy.

Recent experience shows that transfer of the farming workforce is constrained by several factors. In many municipalities, farmer's job opportunities are confined to low paying jobs. Too much bureaucratic procedure involved in getting permits to work outside is another obstacle preventing farmers from getting stable jobs in urban areas. In many parts of China farmers working in cities have to pay various fees, e.g., population control fee, family planning fee, urban environment fee, and commission fee for administrative personnel. New policies are being formulated to facilitate the transfer of the farming population to the urban workforce. They form part of the 'Outline of the national economy and social development in the tenth five-year period'. This focuses on the need to break the rural–urban separation system, integrate labour markets for both urban and rural areas, and establish new relationships between rural and urban areas under the market-oriented economic system. Establishment of small townships/market towns is an effective way to absorb the surplus rural workforce and provides a linkage between rural and urban areas.

Chapter 15

Agricultural Transformation, Poverty Alleviation, and Improvement of Livelihoods in Himachal Pradesh, India

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Introduction

Himachal Pradesh (HP) is a small mountain state in the western Himalayas covering an area of over 55,000 sq km. Its 6.1 million population is 90% rural, living in over 20,000 villages. The arable land is about 11%, of which less than 17% is irrigated. Around 85% of farmers have small, marginal landholdings—the average size is 1.2 ha. With altitudes ranging from 350 – 6900m, the area has four agro-climatic regimes of low hills (below 650m, humid mid-hills (650 - 1800m), a wet temperate mountain zone (1800 – 2200m), and cold and dry highland (above 2200m).

The state has made significant progress in alleviating the poverty of hill and mountain farming communities and in transforming the living conditions of its people during the last 30–40 years. The state has developed a new concept in the development of hill economies (Dreze and Sen 2002; Verma and Partap 1992). The state's development experience has recently drawn the attention of scholars and policy-makers, and has come to be recognised as a model of development for other mountainous states, not only in India but in the whole Hindu Kush-Himalayan region. Dreze and Sen remark, "The experience of Himachal Pradesh illustrates an important feature of contemporary development patterns in India" (Dreze and Sen 2002).

This paper seeks to examine the extent of rural transformation regarding socioeconomic aspects, inter-regional variations in levels of development, factors that facilitated the process of transformation, and lessons that can be learned from the success story of Himachal Pradesh. Following an introduction, the next section explains the extent of rural transformation

regarding different socioeconomic aspects, including inter-regional variations in the levels of development. The factors that facilitated the process of transformation are then discussed in the third section. The fourth section discusses emerging constraints and problems that endanger the sustainability of the transformation process. The policy interventions required to sustain the ongoing process of rural transformation are discussed next, and a final summary highlights the salient features of the rural transformation process and draws important lessons that emerge from HP's development experience.

The extent of rural transformation

The state has undergone rapid rural transformation since its formation, when it was considered one of the least developed regions in the country (Sharma 1987). The indicators of socioeconomic development in the state vis-à-vis Haryana (one of the most developed states in the country) and all-India are given in Table 1. The table shows that despite difficult mountain terrain and associated constraints, the state has performed equally well or even better than Haryana. Most of the socioeconomic indicators, such as infant mortality rate, total fertility rate, proportion of children who have been vaccinated, death rate, life expectancy, proportion of births attended by health professionals, and so on, indicate better performance of HP compared to other states and the all-India average. Likewise, performance in female literacy, access to education for children of different income and social groups, share of expenditure on education (including elementary education) in the net state domestic product, per capita expenditure on education and health, and so on are much higher in HP than in other states despite similar levels of per capita household expenditure. The state has also recorded a much lower decadal population growth, 17.5% compared to 21.3% at the all-India level.

The extent of infrastructural development in the state, which created an enabling environment for the development of social opportunities, is shown in Table 2. The availability of basic amenities like hospital beds, safe drinking water, and electricity is much higher than the all-India average. The number of educational institutions, health centres, and post offices per 100,000 is also much higher than average. The high road density is especially noteworthy in light of the mountain terrain and higher construction costs.

The easy availability of health, education, and other infrastructure has led to a substantial improvement in the living conditions of the local people, as demonstrated by a number of indicators such as low incidence of poverty; high per capita household expenditure and growth of per capita

Table 1: Rural transformation in Himachal Pradesh: selected indicators of social development

No	Particulars	Unit	Himachal Pradesh	Haryana	All-India
1.	Infant mortality rate (1997-99)(per 1000 births)	No	63	69	71
2.	Total fertility rate (1996-8)	%	2.4	3.4	3.3
3.	Decadal population growth (1991-2001)	%	17.53	28.06	21.34
4.	Proportion of young children who have received vaccinations (all)	%	83	63	42
	At least one dose of vitamin A	%	71	45	30
5.	Proportion of births attended by health professionals	%	40	42	42
6.	Proportion of mothers who know about oral rehydration solution (ORS)	%	93	72	62
7.	Proportion of households using adequately iodised salt	%	91	71	40
8.	Life expectancy at birth Female Male	Yrs.	 65.2 64.6	 64.6 63.7	 61.8 60.4
9.	Death rate per 1000 (1997-99)	%	7.7	8.0	8.9
10.	Birth rate per 1000 (1997-99)	%	23.0	27.6	26.6
11.	Female : male ratio per 1000	No	970	861	933
12.	Proportion of child population (0-6) in total population (2001) Male Female Total	%	 13.34 12.32 12.84	 15.81 15.05 15.46	 15.47 15.36 15.42
13.	Proportion of women aged 20-24 married before 18 (1998-99)	%	11	42	50
14.	Proportion of currently married women who are using contraceptives	%	68	62	48
15.	Literacy rate Female Male Total	%	 68 86 77	 56 79 68	 54 76 65

Table 2: Rural transformation in Himachal Pradesh: selected indicators of infrastructural development

No.	Particulars	Unit	Himachal Pradesh	Haryana	All-India
1.	Hospital beds per million persons	No.	1663	600	926
2.	Proportion of rural households having access to safe drinking water (1991)	%	77	68	64
3.	Proportion of households with electricity connection	%	97	89	60
4.	Road length per 100 sq. km	km	44.3	63.1	73.0
5.	Telephone per 100 sq. km	No.	5.2	15.2	8.7
6.	Telephone per 100 population	No.	4.3	3.4	2.9
7.	Proportion of ever married women aged 15-49 exposed to any media (1998-99)	%	84	67	60
8.	Primary health centres	No/100,000 pop	5.00	2.19	-
9.	Primary schools	No/100,000 pop	138.65	30.41	-
10.	Middle/high school	No/100,000 pop	18.60	7.74	-
11.	Post offices	No/100,000 pop	49.35	14.35	-
12.	Bank branches (1997-98)	No/100,000 pop	12.75	8.80	7.70

Source: As given in Table 1.

expenditure; high, real daily wage earnings of agricultural labourers; and so on (Table 3). The proportion of households having no cultivated land, proportion of agricultural labourers in the total workforce, proportion of assets owned by poor households, gini coefficient of per capita consumer expenditure, and the gini coefficient of distribution of ownership and operational holdings, and so on point towards a relatively egalitarian socioeconomic structure compared to many other north Indian states. This enabled people of all groups to participate in the development process, fostered growth with equity, and led to a process of widely-shared development. The low incidence of poverty and the availability of educational, health, and other infrastructure stand in sharp contrast to the situation prevailing in other mountainous regions in India and in those of China where poverty, inequality, and deprivation exist (Chand 2000).

Intra-state variations

The inter-district variations in areas like net state domestic product, growth rate of cereal production, growth rate of state domestic product, literacy, and so on are presented in Table 4, Annex I, and Annex II. Areas where cultivation of high-value cash crops like off-season vegetables and apples has been adopted widely enjoy high per capita income compared to other areas. Some other areas have also recorded high growth rates in the state domestic product. Second, employment in the public sector (including the army) is relatively higher in the low hill areas. Resulting remittance flows and exposure of the people to external influences are two important factors that facilitated the process of rural transformation. Third, cereal production recorded higher growth rates in the mid-hill areas, especially in the fertile valleys. Fourth, there are wide variations in the proportion of rural workers employed in the non-farm sector; it was very high in low-hill areas compared to others. Fifth, fruit production recorded significant growth between 1980-81 and 1997-98. Sixth, the area under vegetable cultivation is higher in the mid-hills compared to other areas. Most of this area is given to cultivating off-season vegetable crops because of suitable agro-climatic conditions. Seventh, compared to female literacy, male literacy is fairly high in all areas. Most impressive is the increase in literacy for children under 15 years of age, both boys and girls, which is over 90%.

Factors that facilitated transformation

The spectacular success the state has achieved in different social and economic spheres has been attributed to features such as the high proportion of persons employed in the public sector, flourishing fruit orchards, high level of per capita development expenditure and well-directed public intervention in support of social opportunities, the activity of women (gender relations being less patriarchal than elsewhere in India),

Table 3: Rural transformation in Himachal Pradesh: selected indicators of economic development

No	Particulars	Unit	Himalchal Pradesh	Haryana	All-India
1.	Proportion of poor (1999-2000) Head count ratio Poverty gap index	% 	 7.5 1.0	 7.4 1.3	 26.8 5.2
2.	Average household expenditure per capita (1999-2000)	Rs/m	740	771	589
3.	Growth rate of real per capita state domestic product (1992-93 to 1998-99)	%yr.	4.6	3.1	4.4
4.	Annual growth of per capita expenditure (1993-94 to 1999-2000)	%	5.06	3.05	4.36
5.	Gini coefficient of per capita consumer expenditure		0.10	0.10	0.18
6.	Proportion of rural households not owning any agricultural land (1992-93)	%	16	43	36
7.	Proportion of asset-poor households	%	7.0	11.0	40.0
8.	Gini coefficient of ownership holdings (1991-92)		0.60	0.68	0.71
9.	Gini coefficient of operational holdings (1991-92)		0.54	0.68	0.64
10.	Proportion of agricultural labourers in rural population (1991)	%	1.0	7.0	11.0
11.	Daily real wage earnings of agricultural labourers Male Female	Rs/D	10.82 8.85	9.72 8.29	7.62 5.42
12.	Proportion of population receiving subsidised cereals from the public distribution system	%	45	5.0	27
13.	Per capita consumption of cereals obtained through public distribution in rural areas (1993-94)	Kg/yr.	31.8	1.4	30.0
14.	Growth rate of number of rural enterprises	%	2.63	1.62	2.27
15.	Growth rate of workers in rural enterprises	%	2.73	1.60	2.15
16.	Proportion of ever married women (15-49 yrs) who have access to money	%	80	71	60
17.	Rural workforce structure (1999-2000) Agriculture Rural male Rural female Non-agriculture Rural male Rural female	%	 71.4 96.1 44.7 4.9	 59.5 92.7 40.5 7.3	 71.4 86.3 28.6 13.7
18.	Rural labour force participation rates (1999-2000) Male Female Total	%	 54.6 47.4 50.9	 48.1 20.2 34.9	 54.0 30.2 42.3
19.	Rural workforce participation rates (1999-2000) Male Female Total	%	 98.2 99.4 98.8	 98.8 100.0 99.1	 98.3 99.0 98.6

Source: As given in Table 1.

local democracy and social co-operation, and so on (Dreze and Sen 2002). These features result from important factors that need to be explained to understand the process of rural transformation, its limitations, emerging constraints, lessons, and possible policy interventions. Moreover, because of high inter-regional differences in agro-climatic conditions, different factors have accelerated socioeconomic development in different areas of the state. For example, while cultivation of high-value cash crops like apples played an important role in districts like Shimla, Kullu, Kinnaur, Lahaul and Spiti, and parts of Solan, Sirmaur, and Chamba, relatively high public sector employment was an important factor in districts like Kangra, Hamirpur, Una, and Bilaspur. This section discusses the factors that contributed towards facilitating the process of transformation.

The adoption of development strategy responding to the imperatives of mountain specificities (i.e., specific niches and constraints) has been the singlemost important factor facilitating rural transformation in HP. In the beginning, planners accorded very high priority to creating basic infrastructure to address the problems of access and mobility. Table 5 shows that transport, communications, power, and social services; including education and health; accounted for more than half of the total plan outlay in the first three five-year plans (1951-1966). These high allocations led to a fairly good network of roads that connected the interiors with main towns and cities, thus breaking the barriers of inaccessibility and isolation, and created facilities such as schools and hospitals. The state has a huge potential for production of hydroelectricity—estimated to be 12,435 megawatts, which is about 20% of the country's total potential. The high allocations to this sector, particularly since the fourth plan, helped not only to further strengthen infrastructural facilities but also to earn additional revenue for the state.

Infrastructure and farm sector focus

The high resource allocations to the agricultural sector coupled with the creation of basic infrastructure created conditions for its development. The horticultural sector made rapid strides. The area under fruit cultivation, including apples, increased from 26,307 ha in the triennium ending 1967-68 to 205,613 ha in the triennium ending 1999-2000, and production rose from 48,492 to 272,264 tonnes. The area under apple cultivation during the same period increased from 15,148 to 84,772 ha, and the production from 30,748 to 225,679 tonnes. Apples are the most important fruit crop, accounting for 80% of all fruit production and around 67% of the total area under fruit crops. Other fruits such as plums, pears, citrus fruits, mangos, and litchis do not have comparative cost advantages and therefore cannot compete with those produced in the plains.

Table 5: Resource allocations in different five year plans; first to ninth five year plans (%)

Sectors	First Plan 1951-56	Second Plan 1956-61	Third Plan 1961-66	Annual Plan 1966-69	Fourth Plan 1969-74	Fifth Plan 1974-79	Sixth Plan 1980-85	Seventh Plan 1985-90	Eighth Plan 1992-97	Ninth Plan 1997-2002
1. Agriculture & allied services	17.56	22.90	28.43	27.74	30.76	22.49	22.61	25.70	20.72	19.22
2. Irrigation	9.78	3.22	2.69	4.85	2.91	5.10	6.21	7.09	4.78	4.54
3. Power	5.87	14.52	7.05	19.56	15.23	25.11	24.94	25.22	20.21	18.23
4. Industry	1.95	3.23	3.62	4.27	4.14	3.66	3.22	2.53	3.02	2.63
5. Transport & communication	44.66	31.16	34.08	28.65	29.90	23.04	21.91	15.67	13.23	10.78
6. Social services of which:	19.96	23.16	22.63	14.25	16.69	18.14	19.33	20.19	29.90	36.95
Education	8.86	7.74	7.98	5.82	7.01	5.19	3.17	6.21	11.36	14.33
Health	6.37	5.41	6.12	3.37	4.09	3.13	2.89	2.50	4.84	5.57
Others	4.73	10.01	8.53	5.06	5.69	9.82	13.27	11.48	13.70	17.04
7. Miscellaneous	0.22	1.81	1.50	0.68	0.37	2.46	2.50	3.60	8.14	7.65
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
9. Plan outlay (100,000 Rs)	564.40	1472.53	2793	4022	10,140	23,895	56,000	105,000	250,200	570,000
10. Per capita per annum investment (Rs)	4.00	11.00	21.00	40.00	61.20	100.50	287.80	544.59	1353.60	2205.03

Source: HP (1971), (1976), (1981), (1989), (1994) and (1999), HP (1997-98)

More recently, the state's agriculture has been undergoing a rapid 'demand-driven niche-based' transition; the cultivation of off-season vegetables like peas, cabbage, beans, tomatoes, and so on is fast spreading to new areas, including those that were earlier growing apples. While apples can be grown only in a temperate belt because of their agro-climatic requirements, off-season vegetables can be grown in large areas, including some areas in low-hill districts like Hamirpur, Kangra, and Bilaspur. As a result, the sown area of vegetables increased from 25,000 ha in 1995-96 to 29,000 ha in 1998-99, and production from 425,000 to 500,000 tonnes. The high allocations to agriculture coupled with high priority to transport enabled even the most difficult areas, including the tribal areas of Kinnaur, Lahaul and Spiti, and the Pangi and Bharmaur regions of Chamba district, to benefit from diversification of agriculture.

Agro-linked off-farm activities

The cultivation of high-value cash crops promotes employment in a number of non-farm activities through strong backward and forward linkages. For example, it has given rise to a number of activities in trade and business; numerous shops have come up to supply chemicals and other inputs, post-harvest material like packing boxes, transportation facilities, nursery plants, and so on. It has also given a big boost to local cottage industries like manufacturing bamboo baskets. Many people in these areas have bought tractors, pick-up vans, and trucks and are supplying construction material, transporting fruit and vegetables, and so on. Numerous repair shops for scooters, televisions, cars, and other consumer goods have also come up to cater to the needs of local people. The most important effect has, however, been construction activities causing a surge in demand for carpenters, masons, and unskilled labour as well as increasing demand for construction material like cement, iron and steel, and bricks. This has had a significant effect on the wages and employment of the local labour force, both skilled and unskilled. High-value cash crop agriculture has also given rise to a powerful rural-urban nexus.

The cultivation of high-value cash crops has also promoted agroforestry in the neighbouring states of Punjab and Haryana, and these states have hence become an important source of timber for packing boxes in HP. The economic and ecological impacts of the cultivation of apples and other high-value cash crops have been well documented by now (Chand 1998; Dahiya and Singh 1997; Sharma 1996). Recent studies have shown that net returns from off-season vegetables are much higher than other crops, including fruit crops (Mehta et al. 1998).

External market links and responsive farmers

The transformation of cereal-dominated agriculture to high-value cash crops has been facilitated by a host of factors. The availability of a huge market in Delhi and other places in neighbouring states has contributed greatly. Delhi is reachable in less than 24 hours from almost all parts of HP, and in less than 12 hours from important areas like Shimla, Sirmaur, Mandi, and Kullu. Vegetables are therefore harvested during the day and packed and transported to Delhi that night, reaching markets the next day while retaining freshness and quality. This has been further facilitated by the availability of fairly efficient means of transportation and communication and a vast road network. This gives HP an advantage over other mountainous regions in Jammu and Kashmir and the north-eastern states where lack of nearby markets has limited the cultivation of high-value cash-crops.

The rapid spread of cultivation of off-season vegetables is due to the very high level of preparedness, awareness, and market consciousness among farmers. Many factors have contributed towards this. Farmers in Shimla, Solan, and Kullu districts have traditionally grown cash crops like potatoes and fruit and have remained in touch with markets outside the state. They have developed a spirit of innovation and are ready to experiment with new crops or enterprises that promise high economic returns. For instance, when potatoes ceased to be a cash crop in the 1950s and early 1960s due to falling yields, diseases, and falling demand, they switched to cauliflowers and subsequently to other off-season vegetables. Likewise, in recent times when apple production is fluctuating and becoming uncertain because of erratic weather, farmers in some areas have started switching to off-season vegetables and even to floriculture. The leading farmers always remain in touch with research institutions and other sources of seeds. They introduce new crops, and others soon follow them. The belief that mountain farmers are conservative and risk averse does not hold true; even marginal and sub-marginal farmers have completely switched to cultivating high-value cash crops and are buying cereals from the public distribution system and even the market (Sharma 1996).

Political commitment/patronage

Committed state intervention and political encouragement and promotion played important roles in popularising cultivation of high-value cash crops. Initially massive subsidies were given to set up plant nurseries, for digging pits, procuring inputs and agricultural implements, etc. to popularise and promote apple cultivation. In many cases apple orchards were planted on private lands by the forest department to encourage people to adopt apple cultivation. A network of institutions was created by setting up a

directorate of horticulture in 1961, appointing a horticultural officer, opening training schools to train growers to prepare nurseries and plant apple orchards. The Himachal Pradesh Horticultural Produce Marketing and Processing Corporation (HPMC) was set up in 1971 with the assistance of the World Bank to provide post-harvest infrastructure like link roads, cold storage, grading and packing facilities, and so on.

Support prices have been introduced for different fruit crops to insulate farmers from fluctuations in market prices. In more recent times, a market intervention scheme has been introduced under which the prices of different fruit crops are fixed according to the grade and quality. If prices fall below these levels, the state government purchases the produce at fixed prices. A vast network of R & D infrastructure has been created to evolve and provide technical know-how to farmers. In addition to an agricultural university, a separate University of Horticulture and Forestry has been established to provide technical back-up to the growing horticultural sector. The central government has also established research institutions to strengthen R & D facilities— the Central Potato Research Institute in Shimla, National Institute of Mushroom Research in Solan, Indian Agricultural Research Institution (IARI) Regional Research Station for Vegetable Research in Katrian (Kullu), and the Institute of Himalayan Bio-resources in Palampur are notable examples. These research institutions have played a vital role in promoting the adoption of high-value cash crops.

The emergence of a relatively efficient marketing system is another factor contributing to adoption and popularisation of high-value production options. In areas where the cultivation of off-season vegetables is 10-15 years' old, local youths have come together and formed cooperatives to market their produce. They act as forwarding agents, collecting produce from small and marginal producers and delivering it to sales' agents in the markets. The system is less exploitative than others, particularly for the small and marginal farmers who have only a little marketable surplus and cannot afford to market their produce. The forwarding agents supply credit to the farmers for buying inputs and also for consumption purposes in exchange for marketing their output. In other areas, a relatively less efficient marketing system has evolved. Under this, growers sell their produce to traders at prices much lower than those prevailing in the market. Discussions with the growers, however, reveal that they know about this difference. The formation of cooperatives by local youths has also started taking place in these areas. The state marketing board also played an important role in boosting the cultivation of high-value cash crops. It has opened marketing yards and established regulated markets where small and marginal growers sell their produce.

The emergence of self-help institutions, such as fruit growers' associations/ cooperatives, in some producing regions has also promoted cultivation of high-value cash crops. These institutions help farmers, particularly the small and marginal farmers, in different ways; by procuring inputs and marketing their produce for example. The Lahul Potato Growers' Cooperative Society is a notable example that played an important role in promoting seed potato cultivation in Lahul Valley.

Preparing to face new challenges

The process of rural transformation in HP state is challenged by a number of emerging problems. The backward and forward linkages arising from the cultivation of high-value cash crops have not stimulated growth in the industrial sector, especially small-scale agro-processing and other industries. These benefits have mostly spilled over to the neighbouring provinces. For example, the cultivation of high-value cash crops has given a big boost to construction activities. The service sector has also not given sufficient boost for the development of other industries, particularly through the effects of forward linkages, and most of the consumer demand for durable goods is met by importing them from neighbouring cities in the plains of India.

Economic reform and falling state support

Assistance has declined, especially since the beginning of the 1990s, which is partly attributed to the changes made on the recommendations of the Ninth Finance Commission. The decline in central assistance, coupled with mounting expenditure, has led to a huge gap between revenue and expenditure obliging the state to borrow, and the debt burden has increased. Decreasing financial assistance coupled with a lack of internal sources of revenue has led to financial unsustainability, which may affect the whole process of rural development. To counter it the state is now advocating payment of compensation for ecological services it offers to the country and, when that happens, it will adequately compensate for the deficit (Azad et al. 1988).

Liberal trade policies

The new outward-looking open trade policies/strategy and joining the World Trade Organization (WTO) have led to the import of apples under Open General License (OGL), and this may pose new problems. Cheaper imports can adversely affect the production of hops, honey, and rabbit wool and sericulture. The problem is likely to emerge in times to come, particularly for horticultural crops. The role of institutions and government line departments in supplying different inputs has declined significantly in

recent years. Since farmers are increasingly switching to hybrids, private seed companies have become an extremely important source of seed supplies. These companies are so far not amenable to any regulatory mechanism and go unpunished in the event of the supply of spurious seeds and chemicals. Not only that, because of their monopoly, they exploit farmers by charging exorbitant prices.

In an era of fast-changing technological developments, hilly regions, or for that matter any region, cannot take their natural comparative advantages as given forever. Experience shows that advantages are now acquired through manmade circumstances like technology and innovations. Many hill areas have lost their comparative advantage due to technological changes outside, as in many crops like off-season vegetables, seed potatoes, etc. that are grown on a large scale in the plains under controlled conditions. The process is likely to be accentuated with the intensification of globalisation, which is bound to bring in new technologies, infrastructure, and support systems (Jodha 2000; Sharma 1999).

Strategies for sustaining transformation

Focus on research and development (R & D)

In the current circumstances, continuous development of new technological options has become a prerequisite for sustaining high-value cash crop farming in hilly areas. This has become essential because of weather fluctuations, high incidence of diseases, and the entry of multinationals and private companies for supplying seeds and other inputs. In times to come, inadequacy of appropriate technologies may erode the comparative advantage of mountain environments currently enjoyed by the hill farmer. The strategy of HP therefore is to increase investment in R & D for evolving new technologies to retain the comparative advantage currently enjoyed by the state.

New or improved support systems

Easy access to markets and timely market intelligence are the most important factors for promoting cultivation of high-value cash crops. Floriculture and off-season vegetables require quick, refrigerated transport and storage facilities. Interventions therefore focus on improving efficient infrastructural facilities like metalloid roads and linking far-flung inaccessible areas with road heads through link roads and ropeways, efficient means of transportation, irrigation, market infrastructure like purchase centres, grading facilities, packaging, cold storage, and so on. A regulatory mechanism for ensuring the proper quality of seeds, chemicals, and so on is essential in the changed economic climate. The government is providing

a regulatory mechanism and setting rules to safeguard the interests of farmers.

Local value-adding initiatives

Improving technology to minimise post-harvest losses and ensure proper grading and standardisation to improve product quality is essential to compete in the changed economic circumstances. The encouragement of private companies to set up small-scale agro-processing plants to add value is an important initiative. About 20% of the produce is culled fruit, which does not fetch favourable prices in the market, but which can be processed and sold at better prices. The state has been advocating for a continuous vigil on the quantity of imports of fruit like apples and for improving or raising the tariff on imports—of course within tariff bindings—to protect domestic growers from undue foreign competition.

Taking advantage of its dust-free environment for the development of electronic goods and precision equipment industries and eco-tourism are new areas with potential. Likewise, hydroelectric potential is being harnessed all over the state. These measures will add to the state's revenue and at the same time boost employment and income opportunities for local people on a more enduring basis.

Conclusions and lessons

Himachal Pradesh has made remarkable progress in rural transformation during the last three-four decades. This is evident from a number of indicators related to social opportunities such as literacy, health, and other infrastructural facilities, low incidence of poverty, and substantial improvement in living conditions. The egalitarian social structure—evident from the low incidence of landlessness, low proportion of asset-poor households, low proportion of agricultural labourers, and low inequality in the distribution of landholdings—resulted in growth with equity and led to a widely-shared development. The adoption of a development strategy sensitive to mountain specificities has been the singlemost important factor in facilitating rural transformation.

The heavy investment in developing roads, transportation, communication, and other social services like health and education led to strong physical and social infrastructure development. This broke the barrier of inaccessibility and enabled even the most difficult tribal areas to benefit from rural transformation. The spreading cultivation of high-value cash crops played an important role in triggering the process of agricultural diversification. This began with apples and later diversified to off-season vegetable crops. Factors such as political patronage and committed state

interventions, easing of inaccessibility constraints, provision of infrastructure, the availability of huge markets in Delhi and other places downstream, and R & D institutions and other supporting departments, and so on played important roles in popularising the cultivation of high-value cash crops suited to the mountain environment.

Though the development model of Himachal Pradesh may not be strictly replicable elsewhere, it has produced important lessons for use with necessary adaptations.

- Committed state intervention and adoption of development strategies incorporating mountain specificities are essential prerequisites for creating basic conditions for development.
- Creating basic infrastructure like transport, health, education, and so on is essential for harnessing local niches. Small and marginal farmers respond quickly by seizing the economic opportunities offered by the availability of basic infrastructure.
- Agriculture facilitated by rural transformation based on high-value cash crops requires continuous technological upgrading to retain advantages and to promote economic viability and ecological sustainability. This assumes all the more importance in the context of economic liberalisation when the comparative advantages of a region cannot be sustained by natural endowments alone.
- Development of local resource-based industries is essential to impart internal strength and resilience to the development process, increase income and employment opportunities, augment revenue, and improve long-run financial sustainability. Development of hydroelectricity, small-scale agro-processing and cottage industries, and eco-tourism are potential areas to explore.

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Annex I: Inter-regional development: selected indicators of infrastructural development

Districts	Road length/100 sq.km (1997-98)	Banks/100,000 pop. (1997-98)	Schools/100 sq. km (2000)	Hospitals/100 sq. km (2000)	Literacy male (2001)	Literacy female (2001)	No. of regulated markets
Bilaspur	91.94	12.35	61.44	8.99	87.13	70.53	1
Chamba	18.70	11.74	20.11	2.76	77.22	49.7	1
Hamirpur	99.37	13.11	59.12	9.21	90.86	76.41	1
Kangra	67.55	11.36	40.04	5.94	88.19	73.57	4
Kinnaur	0.08	21.42	3.86	1.11	-	-	-
Kullu	6.47	12.37	14.28	1.85	84.55	61.24	2
Lahaul & Spiti	6.42	24.24	1.85	0.30	82.76	60.94	-
Mandi	71.95	11.00	52.30	6.65	86.67	65.36	1
Shimla	58.60	16.92	39.37	5.69	87.72	70.68	3
Sirmaur	62.76	10.69	40.57	5.38	79.73	60.93	3
Solan	90.65	15.63	47.88	6.71	85.35	67.48	9
Una	84.54	11.61	43.18	6.49	88.49	73.85	1
H.P	36.00	12.75	23.53	3.38	86.00	68.00	26

Source: HP (1999), HP(1997-98),HP (n.d.)

Annex II: Inter-regional development: selected indicators

Districts	Net cultivated area (ha) '97-98	Area under non-FG (%)	Area under apple (ha) '97-98	Area under veg. (ha) '98-99	GR area under veg '98-99	Share of prime sector (%)	No of small scale industrial units '98-99	No. of ag. enterprises '98	No. of non-ag. enterpri-ses '98	Urbanis-ation (%)	Gini ratio of operational holdings 1990-91
Bilaspur	30,771 (26.37)	3.62	2 (0.002)	1,548 (3.53)	3.90	30.57	49	446	11,003	6.44	0.4446
Chamba	42,387 (6.50)	8.98	7655 (9.22)	1810 (4.13)	4.45	36.77	42	511	13,554	7.50	0.4471
Hamirpur	37,418 (32.57)	1.15	-	752 (1.71)	5.97	25.92	60	945	15,437	7.32	0.5241
Kangra	119,058 (20.74)	11.22	600 (0.72)	3,886 (8.86)	0.42	33.75	156	4352	46,431	5.39	0.6266
Kinnaur	7,602 (1.16)	37.58	5,616 (6.76)	984 (2.24)	-2.24	38.01	6	34	4,408	0.00	0.5129
Kullu	36,603 (6.65)	16.84	18,552 (22.34)	4,298 (9.80)	5.28	32.13	92	856	15,971	7.92	0.4981
Lahaul & Spiti	3,238 (0.24)	34.33	372 (0.45)	2,160 (4.93)	3.26	19.63	17	1150	29,945	0.00	0.4330
Mandi	91,127 (23.06)	9.20	12,872 (15.50)	5,328 (12.15)	1.30	31.39	125	1339	27,497	6.77	0.4821
Shimla	71,059 (13.85)	38.46	32,908 (39.61)	11,455 (26.13)	0.53	16.12	85	1225	13,961	23.12	0.5120
Sirmaur	42,201 (14.93)	14.41	3,929 (4.73)	5,347 (12.20)	1.18	30.15	49	76	16,997	10.38	0.5779
Solan	39,438 (20.36)	11.74	550 (0.65)	4,868 (11.10)	3.60	12.37	137	135	16,911	18.26	0.5038
Una	40,252 (26.14)	8.23	-	1,404 (3.20)	5.06	25.38	57	79	2,215	8.80	0.6348
H.P	560,154 (10.06)	13.27	83,056 (100)	43,840 (100)	1.76	26.82	875	11148	214,330	9.79	-

Key: FG = fruit grower
Note: Figures in parentheses are percentages.
Source: As in Annex I.

Chapter 16

Livestock Husbandry in Chinese Mountain Areas

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Introduction

Over 85% of mainland China is mountainous, including mountain, plateau, and hill areas. Over 80% of ethnic minorities and the vast majority of the 30 million impoverished live in mountainous regions.

The biophysical conditions of mountainous regions due to their unique geographic and climatic features are very complex and significantly affect the economy and society of these regions. Poor accessibility and fragility restrict opportunities for development, and useful resources (timber, minerals, water, and so on) cannot be harnessed easily. The unsystematic ways of exploiting these resources by lowland policy-makers damage the mountain's ecological systems. The areas are underdeveloped and inhabited mainly by the poor. This paper examines animal husbandry as a useful option for developing and using fragile mountain areas.

The situation and trends

Although China accounts for only 7% of the world's cultivated area, it supports 22% of the global population. Experts forecast that by 2030 Chinese total grain production will reach 600 million tonnes, but the production per capita will be only 380 kg, as the population will reach 1.6 billion. The average per capita grain production in mountain areas will be far lower due to unfavourable environmental conditions and low productivity. Nevertheless the mountains have potentials for several other products and activities that can be harnessed to reduce poverty in these regions.

According to a report published by the National Bureau of Statistics in 1993, the total area under cultivation in China is 14.3 million mu (6 mu = 1 acre), accounting for 9.9% of the total mainland area of 14.4 billion

mu. Of this, forest land accounts for 1.9 billion mu or 13.9%; and grassland accounts for 6.0 billion mu or 41.7%. The per capita average cropland is only 12 mu; average per capita grassland is 5 mu; and average per capita forest land is 1.5 mu. All these per capita figures are lower than world averages. Two thirds of the country's surface area is mountainous or hilly. Arid and semi-arid regions account for about half the total land area, while the eastern humid and semi-humid area is occupied by more than 90% of the Chinese population. The population density is 225/km^2. Space is very limited, particularly in areas on the coast and in the plains.

The major sources of food are farm land, grassland, and the ocean. Meat, provided by livestock husbandry based on grass-feed, is an important source of food. However, the average meat output per mu of grassland in the northern pastoral area and southern grassland was only 250g in 1993. Animal husbandry is still a backward and low-productivity option, but it has great potential. The Chinese northern grassy marshland and grasslands have similar productivity levels to the temperate zone grasslands in North America, but the livestock production per unit area is only 1/27th that of North America.

Six provinces (Inner Mongolia, Gansu, Qinghai, Ningxia, Xinjiang, and Tibet and the mountain areas of Sichuan) that rely mostly on livestock husbandry have grassland totalling around 4.1 billion mu, with total livestock numbering about 235 million sheep units. Livestock husbandry plays a key role in the economic structure of Qinghai and the Tibetan plateau, as it accounts for about 40% of the total agricultural output. Although governments supply grain, people in pastoral areas depend on livestock husbandry for other necessities. Even in farming areas, households follow animal husbandry as a sideline income activity.

This paper will take the livestock situation in Sichuan as an example. In 1999 Sichuan produced 65.4 million pigs, 2.3 million cattle, 10 million sheep, and 640 million poultry. The production of meat was 6.1 million tonnes, of eggs was 943.1 thousand tonnes, and of milk was 283.9 thousand tonnes. The total livestock husbandry output reached 35.9 billion RMB (according to constant 1990 prices). The value of livestock products (pig, poultry, meat, and eggs) from Sichuan ranked No.1 in 12 western provinces.

Sichuan has also one of the five largest pastoral areas. Its grassland of 306 million mu ranks fourth among the 12 western provinces. It is located in the Changjiang River basin, and is a mountainous district. It includes 11.5 million mu of cultivable land that on sloping land of over 25°.

Sichuan's livestock husbandry sustains half of the agricultural economy and serves as the pillar of the rural economy; it is also the main source of income for farmers. Cash earnings from selling livestock products represent 61% of the total family income. Livestock products account for 52.7% of the total agricultural and livestock products traded by the county. Finally, foreign exchange earned by exporting livestock products accounts for 53.3% of the total export of agricultural and livestock products.

Economic development in mountain areas is transforming animal husbandry from a sideline to a main industry, from a subsistence activity to a moderately intensive commercial activity. This is manifested by improvement of livestock breeds, increasing use of scientific methods, and commercialisation of products to obtain better economic benefit.

Effect of reform on animal husbandry in mountain areas

Research-based improved breeding and management, and market-oriented processes, have helped the livestock industry. Other policy changes—like returning farmland to forest or grassland, and protecting natural forest for environmental regeneration—have provided more supportive arrangements for the livestock economy in mountain areas.

Since the reform and open policies, the growth in value of the outputs of animal husbandry has been higher than that of plantation. The proportion of animal husbandry in agricultural gross output value rose to 31% in 1998 from 18% in 1980. Animal husbandry has developed into an important source of work and cash income for small farmers and herders. About 50% of their annual income comes from animal husbandry. Animal husbandry also helps in effective use of agricultural by-products. The earlier structure of grain plus cash crops has been restructured to a new model of grain plus forage plus industrial crops. This change has promoted development of a forage industry and industries for processing livestock products.

Animal husbandry has changed from a traditional household sideline production activity to a main industry in rural areas. Before the reform and open market policy, the proportion of animal output in the agricultural output (by value) was only about 10–15%. By 2001, it had increased to about 37%. At present animal husbandry income generally represents over 30% of total household income. In some less-developed regions in the mountains, it exceeds 50%. Animal husbandry has thus helped small farmers and herders to break out of poverty and become prosperous. The Sichuan animal husbandry output is now about 43% of the total value output from farming, forestry, and fishing put together. By 2005 it is expected to exceed 50%. Similarly positive changes were recorded under

the investigation of the several grasslands in Hubei, Hunan, and Yunnan (Zhang Shixing by academicians from biology, Ministry of Chinese Academy of Sciences in 1996).

The traditional small-scale model of animal husbandry in China is changing towards a model focusing on economies of scale and intensive farming. With the land contracting system and a series of policy measures (such as allowing private farming, choice for self-management, and free market pricing) rural areas have better economic conditions for specialised livestock farming. This has led to transformation of livestock farming from a sideline to a main activity, and conversion of traditional animal rearing systems into commercialised activity. The economic return obtained is more and more visible in a slow-developing region. This kind of model is disseminated and applied along with a variety of improved conditions. In the context of consumers changing focus from quantity to quality of food and choice for organic products, the market for animal husbandry products from mountain areas is increasing.

The shortage of supplies of animal products in China has also changed, and animal husbandry can feed the market with satisfying products. The days of animal product shortages and fixed quantity of supply have changed into a period of free purchase and sale, as well as liberal supply. Similarly the days of 'oxen for ploughing, pigs for New Year, the chickens' and ducks' eggs for oil and salt' have become a part of the past in rural areas. At present, meat, eggs, milk, and wool products are rich in quality. The producer has a very big market, and the consumer has a wide choice.

In many regions, animal husbandry, fruit, and vegetable production are not mere sidelines, but are the main production activity. Consequently, the per capita income of small farmers had risen to about 2000 yuan in 2001. Reforms in rural areas have liberated productive forces.

Importance of mobile animal husbandry

The livestock economy of the mountains, especially in minority regions, is based on transhumance and nomadic activities. The Mongol tribes of the Inner Mongolian plateau and the Zhunge'er basin, the Tibetan nationality on the Qing-Zang plateau, and the Uygur nationality in Xinjiang were nomadic people in the past and still practise that system. People use natural resources in accordance with the norms of the nomadic system. This kind of activity has also contributed towards regeneration of grasslands.

People herd livestock on the grasslands and live where there is water and grass. This also helps keep the grasslands fertilised with animal manure

and helps regenerate them. Unless there is an excessive increase in human or livestock population, or conflicts among nomadic tribes, the harmonious situation of nomadic husbandry and the grasslands can be maintained with stable and increased animal production. However, many high-elevation areas are not conducive to nomadic animal husbandry due to high seasonal variability in the availability of fodder and water and longer and longer distances for migration. These factors obstruct market-based opportunities for development.

Therefore mobile husbandry in the Qing-Zang plateau, despite good natural resources, has not gained from market-based processing. This is a big challenge. How to put scientific mobile husbandry into practice? Possible solutions require the following: first, make nomadic people accept improved breeds of cattle and sheep to reduce the number of animals and relax the pressure of the migratory system on the region's ecology. Second, improve the grassland scientifically and establish settlements to ensure a sedentary life for nomads. Finally, use the grass resources in a regulated manner. Such measures will help raise the productivity of nomadic animal husbandry and improve marketing prospects.

Animal husbandry and decline of the grasslands

There are abundant natural resources in China, but the population is too large. Different kinds of resources are exploited. With the increasing population, many people started cultivating virgin land with steep slopes. This has led to severe problems of runoff and soil erosion. Particularly in the loess plateau (the windblown sandy region) and the southwest, cultivated land has reached 45% of the total area, and over-grazing of the reduced grazing lands has led to 30–50% declines in the productivity of natural grasslands.

Solutions to these problems lie in using science and technology in breeding selection, reducing herd size, market orientation of livestock production systems, and education and capacity building among households raising animals. The government has taken some steps in these directions.

Chapter 17

Approaches to the Rehabilitation and Socioeconomic Development of Mountain Regions Affected by Construction of the Three Gorges Reservoir on Chang Jiang River, P.R. China

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Introduction

Migration is an important aspect of a population's geographical distribution. The territorial mobility of people can be divided into two kinds —voluntary and involuntary—according to the main reason for movement. Voluntary movement is always for obtaining better living or working conditions, and it is spontaneous social behaviour. In moving, migrants themselves bear the loss and benefits of migration, while the duty of the government is mainly to manage and guide it. Involuntary migration is not normally desired by the migrants themselves. Instead migrants are forced to move. In modern society, the latter type of migration is principally due to acquisition of lands for infrastructural development like dams, roads, and other construction projects, as well as projects for environmental protection. Engineering projects (especially large dams) result in large numbers of involuntary out-migrants, and the government has to resettle them as a part of the overall project. This paper discusses some policies regarding resettlement of displaced people due to construction of the Three Gorges reservoir in the Changjiang area of China.

It was decided by the Chinese government in 1992 to implement a key water control project in Three Gorges Changjiang . It is the biggest water control project in the world, being constructed in the neighbouring region of Chongqing city and Hubei province that link the western mountain and eastern hill and plain regions together through the river. This project will be finished in 17 years. This great project will not only have significant benefits in terms of flood prevention, electricity generation, and inland shipping business but also will have negative consequences such as displacement of millions of people due to submergence of a large area under the Three Gorges' reservoir. The Chinese government adopted different strategic policies to take care of these displaced people.

Characteristics of water conservation engineering projects and territorial mobility in mountain regions

Dams are normally built in mountain areas. The residents living in the area to be submerged because of reservoir formation need to move to different places with proper arrangements. The Three Gorges' water conservation engineering project affects 600 km of the Changjiang River and its tributary. Its reservoir area will be 1,084 sq.km, of which a land area of 632 sq.km belonging to 20 counties of Hebei province and Changqing city will be submerged. The reservoir will wholly or partly flood 13 towns and 116 cities. The Three Gorges' reservoir will lead to displacement of large numbers of people, and the task for managing these people's resettlement is challenging. We present some aspects of this challenge.

Phasewise inundation

According to the plan for the Three Gorges' engineering project, after starting construction in 1994, the first main stream damming was done in 1997, and water storage will begin in 2003 to the water level of 135m, to 156m in 2006, and the project will be completed in 2009 with the normal water retaining level of the Three Gorges' reservoir of 175m.

The people living within the reservoir area must leave their original residences and move into new residences before the times mentioned above. Moving affected people from the project area must be synchronised with or proceed in advance of reaching planned water levels.

Regionalisation

The water storage of Three Gorges affects 20 counties with a total area of 58,000 sq. km and population of 19.4 million people. Among them, 14.8 million are engaged in agriculture. This region, like other mountain

areas of China, is characterised by inaccessibility and isolation. The local residents live by agricultural production, their educational level is low, and the economy is backward. Some areas depend on financial subsidies from the government. Most displaced people want to move to neighbouring areas due to various traditional and economic reasons.

Compensation

Whether they are part of a national public sector or a local industrial enterprise, the displaced people will lose in production, living conditions, and fixed assets due to the dam construction. They should get adequate compensation, develop their earning/living opportunities, and acquire assets. This kind of compensation is always according to the original value or recovery cost of original functions. Some affected people with limited private property and poor housing conditions will obtain less compensation than others. It is difficult for them to maintain the original living standard. They need more care and help from government and society. The total compensation for people affected by the Three Gorges reservoir is RMB 40 billion yuan (unchanged price of May 1993), including arrangements to settle rural people, construction of cities and towns, reconstruction of factories and enterprises, reconstruction and reformation of special projects for environmental protection, and so on.

Several aspects needing correct treatment

Water conservation engineering infrastructure is built to promote economic and social progress, and the Three Gorges' water conservation engineering project is very important for the social stability and economic development of Changjiang midstream and downstream regions. However, the people sacrificing in the process need to be duly compensated.

Compensation and employment insurance

The chief task of the rehabilitation programme of Three Gorges' engineering construction project is to ensure compensation and jobs for the affected people. Apart from planning a broad framework and assessment of required resources and measures, the strategy should link the provision of such facilities with the construction schedule of the project. This will help in timely provision of compensation. An investigation made in 1993 shows that about 847,500 people, 129 cities, and 31,000 ha of cultivated land and fruit orchard are under the flood line. Plans have already been prepared for resettlement of 1,130,000 people and shifting of buildings of 12 cities and towns and 114 market towns. Different methods are combined to accomplish the goals.

Environmental protection

Three Gorges' reservoir is located in a canyon belt with many hills, and the land used for agriculture is limited. The average land resource owned by one person in the reservoir region is less than one-third the national average. The average amount of cultivated land is even less, and the exploitable arable land is quite limited. Over half the land suffers from different degrees of soil erosion. The land for constructing cities and towns is unstable and prone to heavy geological disasters like landslides, debris flow, and collapse. Building cities and constructing infrastructure and transportation networks are difficult. The natural environment is very fragile.

To balance the imperatives of these variables and their interrelations, a well-assessed integrated approach is needed which could rehabilitate and environmentally sustain the total uprooted economy—including agriculture, factories, and market systems.

Mobility, resettlement, and socioeconomic development

Three Gorges' reservoir is located inland. Expectations are that the total direct and indirect costs of the project will be more than compensated by the gains. However, to facilitate this, rehabilitation and opportunities for the migrant population, rehabilitated industries, and protection of the environment will be essential. The essential steps needed to address these issues will have to be properly synchronised in terms of scale and timing.

Education for migrants

The displacement of people caused by Three Gorges' reservoir will de-link the people from their well-adapted economic resources, social life, and known earning options. Restoration of all these variables is difficult and challenging. To help people adapt to new situations, education of various types will be helpful. Education should help harness the benefits of new opportunities.

Building new townships

Building townships and promoting industrialisation have to be the major components of the resettlement programme. The Three Gorges' project offers unique opportunities for well-planned townships with new infrastructure, modern facilities, and use of new scientific and technological means. Civic facilities, employment opportunities, and links to major market centres should be emphasised. The goals of the resettlement townships should be to promote economic prosperity and social stability using modern approaches.

Government help and policy support

Besides people's own efforts and resettlement budget, the government's action in terms of support and incentives at different levels is essential in rehabilitating the displaced people and industries. This should be treated as a national task to induce all-round support.

Formulation of enforcement plan

The government has prepared detailed planning and implementation reports related to practically every aspect of the change, from settlement of migrants and their compensation and related investment to environmental protection. Regular planning and monitoring reports on different issues are to be submitted by counties and other relevant agencies.

Financial support for rehabilitation and resettlement programmes

The Three Gorges' project requires investment of 40 billion RMB yuan (at May 1993 prices). The general company 'Chinese Three Gorges Construction Project' is a legal entity responsible for managing funds and arrangements for expenditure. To implement the project, the Chinese government collects funds from multiple sources, including national financing, special bonds, and so on. With the strong support of the central government, the investment requirements of the Three Gorges' project have been satisfied. To carry out work related to preventing geological disasters, protecting the environment, and pollution control of Three Gorges, the central government has arranged professional funds for construction. In promoting structural adjustment of the enterprise, the Bank of China arranged professional loan funds of 1.5 billion RMB yuan each year for 5 years from 1997 to 2001.

Preferential tax-expenditure policy

Flexible taxation and revenue collection policies help rehabilitate people and industry. Accordingly, provisions like tax holidays for specific periods for specific activities are integrated components of resettlement schemes. These concessions also cover loan repayment schemes.

Promoting industrial structural adjustment

The Three Gorges project offers a unique opportunity to restructure old industries and promote new industries that better fit the current situation, where environmental protection, response to market forces, and private incentives are given high priority.

Support and co-operation between counterpart organisations

China's policy of developed areas (especially in the east) helping poorer areas (in the west) gets a unique place in the Three Gorges' Project area. As a part of rehabilitation and development programmes, co-operation from developed areas addresses the issues of employment promotion. Numerous famous enterprises at home and abroad have settled in Three Gorges, including the Wahaha Group of Hangzhou, Huiyuan Group of Beijing, Haier Group of Qingdao, White Cat Group of Shanghai, Changcai Group of Jiangsu, Geli Group of Guangdong, Chundu Group of Henan, and so on. The settlement of these famous and excellent enterprises in Three Gorges will not only support the rehabilitation project but also exploit the new market for the enterprises themselves. There are many complementarities between developed and underdeveloped areas, which will be harnessed under the Three Gorges' Rehabilitation Plan focused on new scientific technologies and market-driven processes.

Resettlement of rural migrants

The rural, displaced people of Three Gorges reservoir account for over 40% of the total migrants. Considering environmental protection needs and the limited cultivated land of Three Gorges' reservoir, it is quite difficult to resettle all the people within the project area. The Chinese government therefore took a different approach to this problem. Apart from settling some people in the project area, people are also encouraged and supported to migrate to areas outside the project. Arrangements for 125,000 displaced people from Three Gorges' Reservoir are mentioned in the plan. The Government has planned arrangements for 70,000 displaced people in other provinces; including Sichuan, Shandong, Jiangsu, Zhejiang, Guangdong, Fujian, Shanghai, Anhui, Hunan, and Hubei. The resettlement of migrants from the Three Gorges' area has received the sympathetic attention of various governments, which provide help to these people according to the local situations. Many displaced people have moved safely, have settled in new places, and are engaged in normal production activities. The government is helping migrants to fit into their new situations through education, training,and so on.

Emphasis on new opportunities

Rehabilitation, though supported by the Government, is not the responsibility of the state alone. The migrants too have to make their own efforts with state help. This implies a focus on new enterprises. Although Three Gorges Reservoir is located inland and the level of economic development is not high, the area has special characteristics and

advantages for developing very efficienct ecological agriculture, diversity of biological resources, hydropower, and tourism. There is enough labour, a convenient watercourse of the Changjing, and so on. Based on these special features and comparative advantages of the Three Gorges' reservoir area, the displaced people are encouraged to individually invest in businesses and set up enterprises and construct new secondary and tertiary industries. Farmers are also helped to develop special ecological agriculture such as planting high quality fruit trees, special vegetables, herbs, aquaculture, and so on. The state has to provide financial, technical, and legal support for this change.

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Chapter 18

Poverty Alleviation in Minority Regions of China

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Introduction

In most countries, the economic development of minorities or the regions inhabited by minority people lags behind others. The average income of minority groups is low, and the poverty incidence is high in the case of national or ethnic minorities. Realising the need for eradicating the poverty of minority nationalities as a part of its national development strategy, the Government of China has made special efforts to develop minority areas and their economies. While some areas have gained from this effort, some have not been able to do much due to their socioeconomic situations. This paper will discuss poverty and the poverty alleviation process in minority regions of China.

Nationalities in China

China is a unified country of many nationalities. Besides the Han nationality, there are 55 minorities. Among them, the minorities with populations exceeding one million include the Zhuangzu, Huizu, Manzu, Tujia, Mongol, Uygur, Chaoxian, Miaozu, Baizu, Kazak, Yizu, Daizu, Zangzu, Bouyei, Yaozu, Dongzu, Hani, and Lizu. Minorities having lesser populations include the Oroqen, Tatar, Derung, Hezhen, Monba, and Lhoba. Because of historical reasons, most minorities live in landlocked border areas or mountain areas of the plateau, mainly in the west. National autonomous areas account for 86% of the entire western part of China. Five big national autonomous regions—Inner Mongolia, Xinjiang, Tibet, Guangxi, and Ningxia—lie in western China. Yunnan, Guizhou, and Qinghai are multi-nationality provinces that enjoy the treatment of autonomous regions. These 8 provinces account for 83% of the area of the 12 western provinces; 27 out of 31 of the country's national autonomous prefectures; and 83 out of 120 autonomous counties are situated in the west. All minorities of over a million are in the west except the Chaoxian and Manzu. Except for a few nationalities, including the Gaoshan, Lizu, Shezu, Chaoxian, 55

ethnic minorities have their settlements in the west. Thirty-four minorities are distributed along 20,000 km of the border, of which more than 20 belong to groups across the border.

Economic development in the west has many forms and levels. In areas inhabited by minority people bordering with the Han nationality, the level of social development is relatively high because their historical association with the Han nationality involves interaction and exchange of experiences. For those that live in remote areas, the level of productivity is low, and the monetised economy is underdeveloped. For nationalities living in outlying mountain areas, because of difficult natural conditions, the level of social development is low, the economy is more backward, and even simple production is difficult to maintain. Finally for those living in primitive conditions before 1949 (e.g., the Yi were at the slavery dominated stage, and the Miaozu and Yaozu lived in high and cold mountain areas), the circumstances led to limited external links and economic culture. Their production systems are very primitive with low productivity. The level of social development is very low, and the problem of adequate food and clothing for the masses has not been solved yet (Ai Yunhang 1999).

Poverty-generating processes

Social and economic development of minority people and regions lag behind compared to other areas and groups, and their poverty is persistent. There are many reasons behind poverty in minority areas, some natural and historical, others related to past macro-economic policies of the state.

Unfavourable geographical and natural conditions

Most of the minorities live on the plateau of mountain regions where the weather is highly variable, natural conditions are complex, and the ecological environment is harsh. The barren lands and insufficient conditions to sustain production are natural obstacles to economic development. Topography and weather are the most important geographical factors in minority regions. Thus the input costs and trade costs are higher for any economic activity there than in the lowlands, and investors have less interest. For example, the Tibet Autonomous Region has less oxygen than most regions, and the level of resources required for living is high. The oxygen content of the air in most areas of Tibet is only about 60% that of the lowlands. Therefore oil consumption by automobiles increases by more than 30% in Tibet. Expenses for maintaining and repairing equipment are high. Differences of space and time caused by its geographical position have increased the limits to trade.

Over half of the population of minority regions living below the poverty line are distributed in the south-west where the mountains are high and rocky, the ditches are deep, cultivated land is limited, soil productivity is low, and soil erosion is a serious problem. The other minorities and poor populations are distributed in the high and cold areas, grasslands and desert districts, and arid areas in the north-west. These factors obstruct development and anti-poverty programmes.

Low level of social development

The level of social development is also linked to the level of productivity of an area or a nationality, and the level of productivity is determined by the potential of resources, links with markets, and availability and use of scientific methods and practices. All of them are lacking or have low levels in minority areas.

Before 1949, the social development of minority regions was different. After 1949, through democratic reform and socialist transformation, revolutionary changes took place in the social relations of minority regions. Productivity has gone up. This helped the minorities to skip a number of strategies in the social development process. However, before reforms and liberalisation, the centralised system that did not favour the market led to minority areas being de-linked from markets, and consequently they lagged behind the areas which had been commercialised before adopting the centralised planning system. Economic reforms and subsequent changes have opened new market-led opportunities for the minority areas. Some of the traditional practices and indigenous knowledge can be harnessed now.

Low level capacity for of self-development

The ability for self-development is insufficient in most minorities and minority regions. This has compounded the obstacles created by physical and geographical conditions. Because of the low level of historical economic development, most of the minorities cannot use their existing resources and conditions to develop their economy. They are unable to efficiently employ or accept a market economy. The small-scale production and small market with little links to big markets also obstruct them.

Adverse effect of macro-economic policies

The Chinese government has always sought to help minorities develop their economy, and solve the poverty problems of the minorities, as an important part of its policies on ethnic affairs. But, in the period before the 1980s and even afterwards, anti-poverty programmes focused on a relief approach of social transfers in which the government provided funds and

materials to meet the temporary demands of life without much effort at raising self-development abilities. It promoted the psychological dependency of minorities. In addition, in the course of building the country's mega-projects in minority regions through industrialisation, mining, and dams and promoting regional economic development in some areas, the relationship between minority economic development and economic development of minority regions was not well understood or addressed. As a consequence most minority people remained excluded from the course of industrialisation, and serious structural gaps between urban and rural areas emerged in the minority regions.

Characteristics of poverty-stricken minority areas include the following. (i) The industrial structure is single-pillared, with low-productivity agriculture being the most important activity of most poor counties. (ii) The poverty rate is high. Because of the restrictions imposed by difficult natural conditions and insufficient self-development capacities, the level of poverty in minority regions is far higher than in other areas. Even communities or families able to escape poverty once, again fall into the poverty trap because of natural and man-made calamities. (iii) The level of local economic development is low and finance is inadequate. (iv) The population growth rate is high, and the workforce has poor professional skills. Therefore the per capita income is low, income sources are limited, income increases slowly, and consumption levels continue to be low. (v) Infrastructural development lags behind, and production and living conditions are poor.

Overview of policies

Since 1949, the Chinese government has been making efforts to help minorities to develop their economy, reorient their cultures, and reduce inequality and poverty, as an important part of ethnic policies and affairs. Since the mid -1980s when a planned anti-poverty project was launched, minorities and minority regions have been targeted for special support. Besides enjoying a preferential policy for general poverty-stricken areas, minority regions also enjoy a series of special assistance policies that the country developed.

The general standard of eligibility for assistance to poor areas has been relaxed for minority regions. Accordingly, in 1986 when key poor counties were initially identified in China, the criteria for classifying the autonomous counties of minorities as key poor counties were relaxed by extending the required level of per capita income to 200 yuan from less than 150 yuan. This was further relaxed to 300 yuan for some difficult counties among the pastoral areas and minority regions. Among 331 counties confirmed

as poor and supported, there are 141 poor counties that are minority areas, accounting for 42.6% of the total counties. While implementing the '8.7' help-the-poor plan in 1994, the state revised the national key targets of anti-poverty counties again, and 257 minority counties were identified for support, accounting for 43% of the total 592 counties.

Poor minority counties are selected especially in distributing anti-poverty funds and materials. The government treats five nationality autonomous regions together while distributing anti-poverty funds and materials. Some provinces allocate special funds to be used for supporting poor minority counties, especially while distributing anti-poverty funds. During 1996-1998, the country invested central anti-poverty funds of 16.9 billion yuan in 257 poor minority counties. This constituted 45% of the total amount of anti-poverty funds.

Special anti-poverty funds were arranged for the poverty-stricken minority regions of Ningxia and Gansu, and from 1983 to 2002, the central government allocated a special fund of 200 million yuan to be used in agricultural development of arid areas every year. In 1990, the country established a 'food and clothing fund of poverty-stricken regions of minorities' supporting the 143 poor minority counties.

Co-operation with international organisations assists in poverty-relief and development in the poverty-stricken regions of minorities. Since 1995, the World Bank has implemented three anti-poverty projects in China involving 610 million USD, covering 43 poor counties of the ethnic minorities of Guangxi, Inner Mongolia, Ningxia, and other provinces.

The eastern provinces and cities are organised to launch poverty alleviation programmes in minority regions. In 1996, the central government organised nine coastal developed provinces and municipalities to help ten poor provinces and autonomous regions in the west. They donated money and materials worth 1,040 million yuan over the next three years, implemented 2,074 collaborative projects, and invested nearly 4 billion yuan.

Generally speaking, the poverty alleviation and development strategies for poor minority areas have changed, especially since the 1980s. The relief and charity-focused approach has been replaced by a new approach directed to local capacity building and self-help promotion. This has had a visible impact in some areas, as manifested by reduced poverty and improvement in people's working and living conditions. From 1995 to 1998, 257 poor minority counties have solved the problem of insufficient

drinking water for 10.9 million people and 15 million livestock. The population below the poverty line in five nationality autonomous regions dropped from 8.4 to 4.7 million people. The incidence of poverty dropped from 12.4 to 6.9%. The per capita net income of peasants of poor counties rose to 1,395 yuan from 833 yuan. The infrastructural development of minority areas has accelerated—from 1995 to 1998, more than 10 million mu of basic farmlands were newly developed; 69,000 km of highways were built; 117,000 km of electric lines were erected.

Future prospects and complementarities in sectoral policies

Through this ten-year programme to help the poor, China has already solved the problem of inadequate food and clothing for most of the population living below the poverty line. However, more than 30 million rural people remain below the poverty line, the majority of them in the western minority areas or in regions where minorities are concentrated. The anti-poverty projects of the minority regions and minorities in the future should address the following problems.

Relationship between *economic development of minority regions* and *minority focused economic development*

The concepts of 'economy of minority regions' and 'minority economy' are common in some senses and have differences in others. Economy of minority regions refers to 'economy of the specific area where the minorities live in the multi-nationality country', meaning the economy of areas where minorities live or that of national autonomous regions, which is a combination of regional and ethnic factors. Minority economy emphasises the ethnic factor more. In China it refers to the economic development and living standard of minorities. Developing the economies of minority regions will bring about advances in the economy of various nationalities. But, as seen in the past, regional development tends to exclude minorities. Hence development of minority regions must include development of the economy of minorities. The two should be integrated.

Infrastructure and human resource development

Development of infrastructure and human resource development are the keys to strengthening the self-development ability of poverty-stricken areas of ethnic minorities.

A lot of experience has been accumulated in the efforts for poverty reduction both at home and abroad. During recent decades, several models to deal with poverty have been developed. There are some differences in the ways and means of alleviating poverty in different periods and different

regions, but the key factors in the process are infrastructural development and human resource development. They are respectively termed the 'hardware' and 'software' of regional economic development, and are essential measures for solving the poverty problem.

Infrastructure should include construction and improvement of health and education facilities in addition to communication, transportation networks, and so on. These aspects are already emphasised in the development approach to the west.

The manpower resources of minority poverty-stricken areas are abundant, but the level of development and use is low—another important reason why these areas are poor. (i) Basic education and vocational education should be strengthened. Basic education is a fundamental means of improving national cultural quality and technical ability; vocational education is a measure for improving the ability to get rid of poverty. (ii) Poverty alleviation and the needed out-migration of the workforce should be combined and co-ordinated. Migrations of skilled labour from underdeveloped areas and out-migration of surplus workers from poor areas with limited carrying capacities are important issues in designing anti-poverty strategies.

Linking development to traditional minority cultures

Because of the differences in living environments, historical development, spoken and written languages, and so on of various nationalities in western China, the traditional cultures of minorities have evolved historically. They form important parts of China's plural national culture. We should carry out objective analysis and appraisal of traditional minority cultures, which may have several usable, positive, rational aspects. Development and modernisation of a minority cannot be separated from its traditional culture. Development should be built on a foundation of traditional culture. However, traditional minority cultures have been formed in the course of various nationalities' long-term development in certain historical contexts, and in the new contexts: market, materialism, monetisation, and individual preferences have become driving forces of change. Some elements of tradition tend to block the minorities' efforts at poverty alleviation and development. Analysis and understanding of these aspects will help in designing strategies to integrate the cultural context and development strategies for poor minorities.

Relationship between equity and efficiency

In today's world, where norms and yardsticks of efficiency are governed by economic profitability and cost saving, and the choices of resource

allocation and development approaches are influenced by the level of efficiency, efforts to alleviate the poverty of minorities and develop their economy do not stand much chance. Hence, to achieve these goals some preferences given to minorities (despite their lower levels of efficiency, and so on) are essential. This implies combining efficiency and fairness in decision-making. This forms the basis of several programmes in China for minority areas and minority communities.

Exploitation of natural resources and the interests of the various nationalities

Most of the minority nationalities are concentrated in areas with rich natural resources. The latter are exploited for the mainstream economy with very little local gain. The situation has to be altered by local participation in the projects and sharing the benefits of resource exploitation. The reward or compensation for minority-area resource exploitation for use by the mainstream national economy should be an important measure to help minority nationalities.

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Chapter 19

Developmental Strategies and Policies of Mountain Areas of West China

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General situation of western China

West China has been defined by the State Council as Chongqing municipalities, Sichuan Province, Guizhou Province, Yunnan Province, Xizang(Tibet) Autonomous Region, Shannxi Province, Gansu Province, Ningxia Hui Minority Autonomous Region, Qinghai Province, Xinjiang Weiwu'er Autonomous Region, Neimeng Gu Autonomous Region, and Guangxi Zuang Minority Autonomous Region. It has an area of 6,608,300 sq.km and a population of 355 $\times 10^6$, accounting for approximately 69 and 27% of the total area and population of China, respectively. West China spans 52° of longitude and 32° of latitude, and its main part is located west of 110° east. It is far from the sea, but shares 14,970 km of boundaries with 14 countries or territories (Shaowu Wang and Guangrong Dong 2002).

West China, with abundant natural resources, such as water power, oil, and coal, has much potential for development. Besides, it is the main region of minorities and a region with the largest population living in poverty.

Eco-environmental and socioeconomic characteristics of west china

Large area of mountains and plateau

Mountains (including tableland and upland) account for more than 90% of the total area of West China, and a large part of its area is at altitudes

exceeding 1000m. Western development is essentially the development of the western mountain region. Table 1 shows the area and percentage of mountains by province, municipality, and autonomous region.

Table 1: The area and percentage of mountains by province, municipality, and autonomous region in West China

Province/municipality/autonomous region	Total area/$\times 10^4 km^2$	Percentage of mountain area (%)	Note
Chongqing	8.23	86.9	
Sichuan	48	90.1	
Guizhou	17	95.1	
Yunnan	38	95.0	
Tibet	120	76.5	
Shannxi	19	84.6	Including upland excluding tableland
Gansu	39	77.8	
Ningxia	6.6	54.1	
Qinghai	72	69.9	
Xinjiang	160	56.0	
Guangxi	23	86.0	
Neimenggu	110	48.5	

Put together the Himalayas and Qinghai-Tibet Plateau, Yuangui Plateau, Loess Plateau, and Hengduan Mountains constitute the largest mountain and plateau area in the world. The relative height difference between lower and higher elevations is more than 9000m, forming various types of physiographic regions with different vertical zones. Those variations are responsible for gene-diversity, species' diversity, eco-diversity, and the corresponding (or consequential) ethnic, cultural, religious, and social and economic diversity. However, poor accessibility and isolation create a variety of constraints to economic and social development of these areas. Besides, the environment of western mountain regions is unstable, fragile, and highly sensitive to inappropriate use patterns. The latter often cause permanent resource depletion.

In contrast, most of East China lies below 1000m, and its main topography is plains like the North China Plain, the middle and lower reaches of the Yangtze River, and the Pearl River Delta.

The natural ecosystem is extremely fragile in West China

Serious drought and scarcity of water in the north-west results from widely distributed fragile eco-environments comprising deserts and loess area.

Large areas of karst topography and mountains, especially high and cold conditions, are found in the south-west. Serious eco-environmental problems have been created due to the improper exploitation of natural resources in those fragile regions. More than 80% of the land suffers from heavy soil erosion in West China.Similarly the figures for grassland degradation, desertified and sloping cropland (25° and above)are respectively 99,93.2,and 70%.Moreover, rock-desertification in the south-west is more harmful than desertification in the north-west, which is spreading at a speed of 2,500 sq.km per year.

Economic development in West China lags far behind East China

According to the 'Chinese Statistical Yearbook', the gross domestic product (GDP) of China in 2000 was 8,940,350 $\times 10^6$ yuan, out of which West China contributed just 1,665,466 $\times 10^6$ yuan (18.6%), which is less than the total of Guangdong province (966,220 $\times 10^6$ yuan) and Jiangsu province (858,270 $\times 10^6$ yuan). The mean annual growth of GDP in West China from 1988 to 2000 has been 8.7%—less than that of East China (10%) (Yongxian Yang 2002). The percentage shares in GDP of primary, secondary, and tertiary industry in West China respectively have been 22.3, 41.5, and 36.2%, respectively. The corresponding figures for East China have been 11.6, 45.8, and 42.6%. It is clear that the proportion of primary industry in West China is high and that of secondary industry and tertiary industry very low.

The production level, especially industrial production, in West China is not high. Per capita GDP of Xinjiang is the highest in West China (7,470 yuan) and that of Zhuizhou is the lowest (2,662 yuan). The mean per capita GDP in West China is 4,814 yuan in comparison to 7,078 yuan for the whole country and 13,641 yuan for East China (Table 2). The mean per capita GDP in West China is two-thirds the average level for the whole country and one-third that of East China (Yongxian Yang 2002). This is even lower than the lowest province in East China. The poor technology, the outmoded facilities, the improper production structure, the high proportion of state-owned enterprises, and overall slow pace of development all limit the economic development of West China.

Transport infrastructures are limited

As mentioned earlier, West China has severe problems of access and mobility. The length of highways and railways in West China is 503,000 km and 25,800 km, respectively (1999 data). The length of expressways is more than 2,300 km, the length of navigable inland waterways is 21,700 km, and there are about 600 civil aviation routes. Though it is much

Table 2: Comparison of per capita GDP by province, municipality, and autonomous region between West and East China

Region	Per capita GDP (yuan)	Region	Per capita GDP (yuan)
West China	4,814	China	7,078
Chongqing	5,157	East China	13,641
Sichuan	4,784	Shanghai	34,547
Guizhou	2,662	Beijing	22,460
Yunnan	4,637	Tianjin	17,993
Tibet	4,559	Zhengjiang	13,461
Shannxi	4,549	Guangdong	12,885
Gansu	3,838	Jiangsu	11,773
Qinghai	5,087	Fujian	11,601
Ningxia	4,839	Liaoning	11,226
Xinjiang	7,470		
Guangxi	4,319		
Neimenggu	5,872		

better than before, it still lags far behind the situation in East China. Furthermore, in the north-west the density of railways, highways, waterways, and pipelines is 0.22 km/km^2, 3.93 km/km^2, 0.05 km/km^2, and 0.06 km/km^2, respectively. These are much lower than the figures for the country as a whole (Shaowu Wang and Guangrong Dong 2002). The basic conditions of transportation by province, municipality, and autonomous region in West China are shown in Table 3.

The population's health is poor

Mountain regions in West China not only have a poorer quality of life but also poorer conditions of public health than East China. Mean life expectancy at birth in West China is only 65 years in comparison to 70 years in East China, according to the census of 1990/92. The mean birth rate and natural growth rate of the population in West China were 17.8 and 10.8%, respectively in 1998, compared to 12.5 and 6.2%, respectively, for East China. The mean death rate in West China in 1998 was 6.9% compared to 6.3% in East China. Similarly, the mean infant mortality rate in West China in 1993 was 59% compared to 27.3% in East China. The causes of death in West China seem similar to the causes in developing countries: infectious diseases, poor health facilities, and general poverty (Suming Wang et al. 2002).

Table 3: Transportation in West China

Region	Railways in operation (km)	Highways in operation (km)	Expressways (km)	Navigable inland waterways (km)	Total civil aviation routes
Chongqing	750	27,200	309	3,000	45
Sichuan	4,654	100,700	747	8,400	140
Guizhou	1,639	33,600	-	2,048	40
Yuannan	1,991	76,000	268	1,324	47
Tibet	-	22,400	-	-	10
Shannxi	1,941	42,200	212		119
Gansu	1,966	35,900	-	1,306	20
Qinghai	1,103	12,800	21	-	10
Ningxia	776	10,000	94	74	10
Xinjiang	3,008	27,200	260	-	60
Guangxi	2,364	51,300	673	5,581	109
Neimenggu	5,647	63,800	-	-	20

Natural resources

Rich in natural resources

West China is a region with almost all types of the natural resources found in China. Water and power resources, reserves of coal, and reserves of natural gas far exceed their availability in other parts of China. Large areas of land have not been used. The unused area of grassland and cropland is about 40–90% larger than that of other parts of China. Bio-resources, climate resources, and tourism resources also play an important role in the economy. The mineral resources—ferrous, nonferrous metals, and industrial minerals are all of great importance. West China can develop key industries such as forestry, animal husbandry, and tourism.

High regional variations in natural resources

Though West China as a whole is rich in various natural resources, their distribution is scattered. For example, iron ore is mainly located in Sichuan and Neimenggu. Non-ferrous metals are mostly found in Yunnan, Gansu, and Guangxi. Coal is mainly produced in Neimenggu, Shannxi, Xinjiang, and Ningxia. Petroleum is concentrated in Xinjiang and Qinghai. Natural gas is found in Xinjiang, Sichuan, and Qinghai; and Ningxia is short of many important minerals except coal. The south-west is rich in water resources while the north-west suffers from lack of water.

Both raw and processed materials have to be transported long distances, which increases the cost.

Poor exploitative condition of natural resources

Most of the natural resources of West China are in regions with many deep-cut valleys and steep mountains. The up-and-down topography makes it hard and expensive to build highways and railways. There is still no railway or expressway in Tibet, which increases costs.

West China has a very harsh climate, most regions are threatened by cold and drought. This also makes it harder to develop natural resources. The mean annual temperature of the Qinghai-Tibet plateau is the lowest in China. The north-west is far from the sea and affected by the height of the Qinghai-Tibet plateau. It's annual rainfall is below 200 mm, which makes the region suffer from serious drought. Annual rainfall in the mid-Zhunga'er Basin, Tarim Basin, east Xinjiang, Alashan, west Hexi, and west Caidam Basin is even below 50 mm, making these regions dry and drought prone.

Past development in west China

West China has experienced four periods of exploitation from the middle of the 19th century until the 1980s.

In the middle of the 19th century, the westernisation movement brought capitalistic manufacturing into the feudal economic system of western China. At that time, industry based on raw materials began. Qingxi Ironworks, built by advocates of the westernisation movement in Zhenyuan County of Zhuizhou, was the first civil industry in West China.

Most industries and some universities were moved to West China during the War of Resistance against Japan. After the war, some were moved back to East China.

During the 'first-five-year plan', after the revolution in the country, many key constructive projects were moved to West China.

In May of 1964, Chairman Mao introduced triple-line construction. A great deal of human resources, material resources, and financial resources were put into development in Sichuan, Guizhou, Yunnan, Shannxi, Gansu, and so on, and many old corporations in coastal areas were moved to the west. For more than ten years, large-scale construction was undertaken. This construction (or development) led to setting of industries to develop and use energy sources, iron and steel, machines, and chemistry. The iron

and steel industry became the forerunner of the national defence industry and became a keystone of change. It established the base of development in West China, and this was supported by developed coastal regions and the whole country after China's Reform and Open Door Policy were put into practice.

These initiatives speeded construction as a part of the development of the West, but did not radically change the poverty situation in West China for several reasons. They emphasised the construction of industry but ignored the development of human resources. While emphasising industries, they ignored links to agricultural development. They emphasised the exploitation of natural resources but ignored the development of other sectors such as education, communications, and markets. Development was targeted through a planned economy and governmental interventions, but ignored the role of markets and price mechanisms.

Particularly during the period of the 'triple-line' construction, industries were established based on national defence considerations instead of economic principles. Many corporations were located in sparsely-populated mountain regions with few complementary industries. This caused low throughput, poor yield, and high transportation costs. The embedded system of national large- or mid-scale corporations was of little use to the local economy. As a result, the disparity between East China and West China grew larger and larger.

Since 1978, reform, the open door policy, and the policy of richer provinces supporting the West have brought some advantages to the West.

Since the 1990s, economic development has been directed to a socialist market economy. Markets are given more and more importance in allocating resources. The new open door policy implied an overall open and regionally balanced economy from south to north and from east to west. During this period, development has been emphasised. However, the economy of coastal regions is growing rapidly, while economic development in the West is still in the stage of low to high as during the 1990s. Broadly speaking, the efforts since reforms have established a foundation for rapid development of West China.

Development strategy for the western mountain regions of China

Economic development in mountain regions is the key issue of western development. Five kinds of development strategies are discussed here.

Development of basic infrastructure and service facilities

This is the very basis of mountain area development, especially in view of the poor accessibility and lack of support facilities for industry. Facilities like a public transportation network, highways, railways, airports, natural gas pipelines, internet, telecom, and broadcasting provide opportunities to connect far-flung areas, which helps in local development. The focus on the development of water resources is equally important.

Ten big projects have been in process in the region since 2001, including (i) railway construction between Xi'an and Nanjing (a distance of 955 km, with a total investment of up to RMB 23.2 billion); (ii) railway construction between Chong Qing and Huan Hua (640 km, with an investment of up to RMB 18.2 billion); (iii) highway construction in the West; (iv) a plan to build 10 new airports; (v) building of Light Rapid Transit (LRT) in Chong Qing city (13.5 km, with an investment of up to RMB 3.3 billion); (vi) natural gas pipeline from Shebei to Xining to Lanzhou in Caidam Basin (95km, with a capacity of 2 billion m^3/yr); (vii) Zipingpu hydro-project in Sichuan and Shapotou hydro-project in Ningxia (up to RMB 7.5 billion); (viii) returning $0.343\times10^6 hm^2$ to forest by stopping ploughing in and planting $0.432\times10^6 hm^2$ of forest or grassland area; (ix) Qinghai potash fertiliser project; and (x) construction of colleges and universities in West China. Projects to transport natural gas and electricity from West to East commenced and the Qinghai-Tibet railway started in 2002.

Development of human resources

In light of the area's needs and background and the poor skills of human resources in mountain regions, a preferential approach to help human resource development through education, is essential. Development in western mountain regions has lagged behind mainly because of lack of knowledge, technology, information, and education. The development of human capacities through education is a key step.

Several suggestions have been made. (i) Make the best use of the knowledge, information, education, and techniques provided by today's world to boost economic and social development in mountain regions; to increase the capacity of mountain regions to gain external knowledge and to create knowledge as well. (ii) Increase people's ability to absorb knowledge and exchange knowledge. (iii) Shorten the lag in knowledge, information, education, and techniques. (iv) Emphasise quality education from childhood to popularise basic education and professional education and try to develop higher education.

Regulation of industrial structure

It is most important to set up key industries. We should reorient and regulate production, industrial, and economical structures according to the demand of domestic and international markets. In agriculture, economic crops, forestry, and animal husbandry should be the key production activities instead of grain production. Light industry that mainly processes raw products and uses advanced technology should be the focus instead of heavy industry. Development of rising industries like tourism is needed. Industries that use the comparative advantages of mountains must be developed.

Agro-industrialisation in mountain regions needs further improvement by focusing on niche products and integrated agro-processing. Small-scale management with the family as its unit should be changed step by step to large-scale production of items such as fruit, tea, handicrafts, and so on. Industrialisation should focus on issues of production, purchase, processing, storage, transportation, and distribution of farm products and commercial, financial, and trading information.

Tertiary industry should be promoted and taken as a high point of the mountain economy. The share of tertiary industry in GDP needs to be increased. Tourism in the mountains is one such example. It will help other industries such as food, transportation, craftwork, entertainment, and culture.

Allocation of resources through markets

Mountain areas are rich in resources, but their inhabitants are poor. One reason for this is that resources are exploited by outsiders with little gain for locals. Second, the development activities promoted in the past did not involve locals, nor were they concerned with the negative side effects of projects on the environment. Under the new policies, more and more activities and industries should be developed on the basis of market signals, with the involvement of local people.

Sustainable development strategy

Sustainable development means continuing beneficial economic and industrial activities without depleting environmental or natural resources. However, due to the focus on production only, the producers in the region have ignored the environment. Due to lack of capital, knowledge, and so on, people do not protect the environment when they exploit resources. Consequently there has been serious soil erosion in the Loess Plateau, environmental degeneration of headwaters of some rivers such as the

Yangtze and the Yellow River, higher frequency and incidence of sand storms in Gansu and Neimeng and desertification of some areas; more serious Karst rock-desertification in south-west mountain regions; a sharp decrease in wetlands in Xinjang in the past 50 years from $2.80\times10^6 hm^2$ to $1.48\times10^6 hm^2$ (Hongchi Zhang 2000). Landslide and debris flow hazards in Sichuan and Yunnan have increased. An ecological crisis exists everywhere in the western mountain regions, which not only slows down the economic development of West China but also threatens the ecological security of the country's mid-east.

Sustainable development that focuses on improving the environment should be insisted upon in the development strategies for western mountain regions. Economic activities should be in harmony with eco-environmental improvement. Rural people should be mobilised to join eco-environmental protection and improvement due to the large scale of the task. Meanwhile, these efforts need strong economic support because their benefits will flow only after a long time lag. Otherwise persons suffering from hunger and cold will not stop cutting trees for energy and mowing grass to create farming spaces. Investment of resources as well as application of science and technology will be necessary. This can help achieve high throughput, also helping farmers and herders to reduce poverty.

Development policies for western mountain regions

Policy targets: focused activities

The important target activities include:

- promoting economic growth through introduction of capital and human resources into West China;
- improving the welfare of citizens through social transfers and support;
- improving employment through encouraging the flow of labour, including migration; and
- upgrading the environment through administration and legislation.

At present, the state mainly emphasises the first target—economic growth. The policy should be set to the other target activities mentioned above.

Differentiated development policies for different areas

Central cities

Central cities like Chongqing, Chengdu, Xi'an, Lanzhou, and Wulumuqi are the key developing areas. They need national support; adopting leading-edge supporting policy. The form can be (i) to perfect and fortify

the central town function; (ii) to upgrade the technology and structure of the leading industries of central cities.

Areas with rich resources

Policies should include: (i) development of preferential policies to integrate the resource potential of western special zones with the preferential policies of China, so that more investors can be attracted to the West; (ii) development of a resource protection policy to ensure proper levels and methods of resource exploitation; (iii) protection and restoration of the environment through encouraging local people and careful supervision of the protection and restoration.

Poor areas

Poor areas include the Loess Plateau, the Mengxin drought area, the south-west karst area, and the Qinghai-Tibet Plateau.

The policies are: (i) shifting of relief policy towards development policy; (ii) identification of different policies to invest into areas which are not necessarily the most poor but have the most potential for development ; (iii) use of many support mechanisms, including loans and investment; (iv) formulation of a series of preferential policies such as beneficial loans, tax concessions, relevant development, needed education, and so on.; (v) adoption one benefit/help policy (i.e., specific policy for specific benefit); (vi) obtaining international support.

Border areas

Specific policies and measures are necessary regarding finances, taxation, import-export, and administration in border areas.

Developing a policy for the countryside

It is hard to increase farmers' incomes by raising the prices of farm products because the prices of most farm products in China are already higher than those in international markets. Prices are expected to fall after the further opening of the market of farm products in China. It is almost impossible for the government to solve this problem by giving subsidies. The scope for increasing income through agricultural production (especially cereal crops) in mountain regions is limited. Hence, the alternative approaches indicated below are needed.

a) Adjust agricultural structures to local conditions and add more value to farm products by further processing to meet the requirements of national and international markets.

b) Improve the efficiency and productivity of agriculture. This is an essential step towards increasing farmers' income and requires measures related to technology management and enhancing the benefits of larger-scale production. However, these steps are constrained by current levels of agricultural units and their low quality. To achieve large- scale activities and integrated management of land, some policies are needed. They involve transfer of surplus workers to non-agricultural activities, training and skill improvements for workers, security for farmers, and better links to markets.
c) Execute the land usufruct transfer and private owner operating system to promote industrial development and population regulation in the countryside. Here peasants could lease their land to private owners, who would be responsible for peasants' employment and pay salaries to them. In this way the small farmers evolve a new form of relationship with the owners to develop the countryside and agriculture and increase their income.

Human resource development policies

The quality and capacity of human resources are important in developing the West. This will not only build the technical and management skills of workers, but also in due course have local enterprises in different industries. Formal and technical education, specialised training, and exposure to outside areas are some of the ways to promote this.

Natural resource conservation policies

The western region is rich in natural resources, but their inappropriate use leads to over-extraction and environmental degradation, with negative economic consequences. Environmental restoration should be the central concern of any development programme. Besides the state, the local communities should be actively involved. Funding from banks and other institutions should be mobilised.

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Chapter 20

IFAD's Approach to Poverty Reduction in Marginal Upland Areas of China

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Introduction

The International Fund for Agricultural Development (IFAD) has concentrated its efforts in the East Asian region on areas where natural resources are seriously depleted and where the risk of soil loss to physical degradation is persistently increasing, endangering the livelihoods of large numbers of inhabitants in the process. It was found that these situations prevail in large parts of the region's remote mountainous 'upland' areas where the old balances between productive potential and actual population are increasingly disturbed, endangering the livelihoods and, at times, also the social and cultural integrity of large numbers of inhabitants. Over the years IFAD has developed a strategy with its partners in development, notably including the beneficiaries and their communities, to enhance the economic and social capabilities of the populations living in these marginal zones.

The populations concerned had developed ways of life that were entirely adapted to prevailing conditions. They were also able to apply, unassisted, coping mechanisms that allowed handling even of the most exceptional situations, principally resulting from temporary climatic set-backs. Over the last century or so, these lasting equilibriums one by one fell under the impact of a rapid increase in population which required the sharing out of available resources, principally land, into less and less meaningful economic bases for the households' individual livelihoods. In addition, both dry land and upland areas were invaded for purposes that can only be described in terms of 'mining' of natural resources. This was seen by some as the price to pay for economic development, which was generally believed to equate to progress. It is now clear that this 'price' may have

been too high and that this kind of economic development has had severe 'side' effects, the scale and impact of which had not been understood and, in many cases, are still not always taken into account to the full extent today.

In upland areas the mining of resources habitually came under the guise of massive deforestation, taking with it animal and plant resources that used to contribute substantially to the local economies. Not only were these activities implemented in a way that often proved to be disrespectful and destructive of the natural resources and, hence, unsustainable, but, of themselves, they further eroded the per capita resources available to the local populations. The local resources can no longer cover the needs of the local populations, which invariably now count among the poorest in the countries concerned. These populations have resorted to large-scale out-migration, a traditional coping mechanism. However, as the recent Asian crisis has shown, excessive reliance on out-migration is, itself, risk prone.

Only with a major intervention can there now be a future for the peoples living in these conditions of seriously depleted natural resources. The nature, scope and methodology of this intervention, in particular in terms of targeting of actions and of benefits on to these quickly impoverishing populations, are the subject matter of the present paper. Naturally the paper focuses on IFAD's methodology, experience, and lessons learned.

The remainder of the paper is in two parts. The first part will provide an insight into the overall strategy that has evolved within the context of IFAD's interventions in marginal upland areas. The second part will focus on the specific application of this strategy to the situations as they occur in China, where it is known that the vast majority of the very poor, today, are residents in the remote upland areas that make up such a large proportion of the total land area of Western and South-Western China.

THE UPLANDS OF EAST ASIA

Characteristics of uplands

No two upland situations show identical bio-physical and cultural conditions and the combinations of socioeconomic circumstances facing individual communities will be unique to their local area. There is therefore considerable diversity in both the detailed characteristics of the various uplands and in the ways that they are managed. It is nevertheless possible to accurately identify key features that are broadly characteristic of conditions prevailing in the uplands of Asia.

Geographical context

The uplands of Asia are hills, dissected valleys, and mountain areas with slopes of 8% or higher and, as such, may cover as much as 60% of the land area of Asia. Land below 8% slope that is used for dry land farming may, in fact, also be subject to some of the key constraints that pertain to the steeper areas and cannot be excluded per se from policies for upland development. In Asia it is estimated that perhaps as much as 1 billion people live and earn their livelihoods in these uplands. This population counts among their ranks a highly disproportionate share of the very poor of the region and of the ethnic minorities.

It is necessary to state, from the outset, that these uplands are not isolated entities within the national or international geography of the region. They are usually an important source of water. Indeed, in winter, they gather water in their snow-caps which they slowly release during the following warm seasons. Uplands are also increasingly recognised as sources of hydroelectric power and biological diversity. They also provide valuable minerals as well as forest, livestock, and agricultural products. They are already host to recreational activities, something that can only increase rapidly with economic development in the region. However, inappropriate exploitation of these natural resources has led to accelerated soil erosion, landslides and flooding, and, overall, a rapid loss of habitat and genetic diversity.

Soils and hydrology

Soil conditions are very variable and depend on the parent material. Good agricultural soils are generally found only in the narrow valleys formed as alluvial and/or colluvial deposits. Upland areas tend to be characterised by high energy river systems with considerable ability to scour soil and transport coarse as well as fine sediment. Runoff occurs usually in high velocity channel flows and is seasonal as it is associated with monsoon rains and/or snow melting seasons. The main exceptions to this situation are the Karst areas of Southwestern China and Northern Indo-China where most precipitation seeps into the subsoil through the characteristic 'sink holes' that collect water in vast subterranean flows.

Climate

Upland areas, especially if mountainous, exhibit a very wide variety of micro-climates as both temperature and rainfall can vary significantly over very short distances depending on altitude and topography. Mean temperatures decrease markedly with altitude, and high mountain ranges may quickly progress from tropical conditions in the foothills to arctic

conditions at the peaks. Above a given altitude the occurrence of frosts, often exacerbated by strong winds, will limit cultivation. This situation occurs at considerably higher altitude on south-facing slopes. Rainfall usually increases with altitude but the slopes on the leeward side of the predominant (monsoon) wind systems may, in fact, be affected by rain shadows.

Fauna and flora

In upland areas with considerable variation in relief there is usually a well-established altitudinal succession of natural vegetation zones usually progressing from plains, woodland and forest through montane forest, bamboo thicket, montane grassland ending in scree, bare rock, snow and ice. Man has had a modifying and therefore an, in places, quite severe, impact on the original vegetation through practices such as logging, fire clearance for agriculture and grazing. Whereas biodiversity of individual upland areas may be limited in terms of the total number of plant and animal species per se, a high proportion of these will often be specific, even exclusive, to the particular hills or mountain range. Losses to biodiversity from the upland areas may therefore be irreversible.

Socioeconomic context

Population and culture

Upland communities often exhibit strong social and cultural cohesion and they have developed a corresponding organisational structure, which will take into account the particular constraints imposed by physical isolation. The uplands are commonly the home of ethnic minorities. Their residence in these areas has rarely come about by their own choice, but rather because they have been displaced or, as later arrivals, excluded from the lowlands by larger and more powerful ethnic groups. There is therefore considerable cultural diversity between upland communities which set them apart from the lowland communities but also from each other. A key element is the existence of a large number of often mutually unintelligible minority languages, and the lack of a shared language means that upland indigenous peoples may be severely disadvantaged in their dealings with the outside world. The resulting political, social, and economic deprivation contributes to their current levels of poverty over and beyond what is already the result of the comparatively unfavourable natural living conditions.

Upland economies

Uplands are usually among the poorest and least developed parts of a country and upland communities are predominantly rural and dependent on agriculture, although livestock and forestry make contributions in traditional societies and mining and tourism may also be locally important.

Upland regions usually have natural advantages only for a relatively limited number of production items and, as a result, the upland rural economies tend to be of a subsistence nature with limited opportunities for cash earning activities in situ. Forestry has predominantly been extractive in nature, logging only the most valuable timber species but gathering of some non-timber products such as rattan, vines, fruit, and medicinal plants also occurs.

Within the uplands, farming is usually undertaken by individual households and is largely geared to the production of subsistence crops. In spite of official restrictions and statutory limitations that increasingly apply, shifting cultivation is still widespread where population densities allow the practice. Sedentary farming occurs on small individual farms that tend to consist of widely dispersed little plots. Whilst the latter is inconvenient in terms of the physical effort required, the dispersal of plots enables farmers to exploit local differences in agro-ecological conditions. This dispersal, of course, also contains a strong element of equitability in access to resources among the populations of, say, a given watershed. In many upland communities livestock are important for transport and draught power but they may also be kept for the range of products animals provide: milk, meat, hides, wool, and even manure. Livestock also act as a temporary storage facility for wealth. Whereas cultivation predominantly occurs on privately-owned land, many upland communities practise communal pasture systems for livestock. It is worth noting that the foothills are typically characterised by production systems that are crop-oriented and that the upper mountain systems are more livestock oriented with the mixed systems occurring in the areas in between.

Trees, grown in association with crops and livestock, are an important component of most upland economic systems, producing timber, poles, fuel, fodder, and fruit, often providing the households with a cash-earning opportunity. As a result of the wide variations in agro-climatic conditions, there is considerable diversity in the tree species and the agro-forestry systems practised within the uplands.

In recent years improved communications and widening disparities in the urban-rural income earning capabilities have fuelled out-migration from the upland to the lowland areas, in particular to the urban centres where most wage-earning opportunities in industry and services occur. On the whole, this provides much needed relief for upland families and, in the medium term, it may actually improve the per capita resource base for those staying behind. However, when out-migration crosses a threshold, rapid deterioration of the upland production systems may occur as a

result of lack of maintenance of crucial systems, such as irrigation, through insufficient resident labour availability. In some cases, expanding upland populations through in-migration of settlers from the over-populated lowlands has increased pressure on scarce land resources and has subjected fragile eco-systems to the threat of degradation. Some of these migratory streams have been encouraged by the public authorities, at times on the basis of an incomplete comprehension of the nature and role of the apparently under-used common land resources in the uplands concerned.

Gender aspects

In the upland communities women may face additional constraints principally related to their dual duties and responsibilities to the family and to the family farm leading to very heavy burdens, including all of the child rearing, and the primary responsibility for wood and water gathering and for health. Studies have indicated that women in upland areas typically shoulder 70% of the workload of cultivation and accomplish almost all the processing. As a result of male out-migration in search of income-earning opportunities, there is a deep and growing proportion for female-headed households in the uplands, the aptly named 'feminisation of agriculture'. This evolution naturally leads to even greater labour burdens falling on women. However, cultural traditions often allow men to retain decision-making responsibilities for land use, crop planning, and livestock management, even when absent for most of the year.

Social and cultural restrictions in many traditional societies limit women's access to services, resources, and decision-making processes at all levels. The scholastic status of women is commonly well below that of the men, which is itself comparatively low. This means, as a consequence, that women have more limited access to suitable technology and tools for easing their work or for taking up income-earning activities themselves. Also, women are less aware of their civic rights in society and are hampered when faced with the necessity of applying administrative procedures. The overall result is that women have a lower civic status and less power in the rural community to access resources such as land and credit.

Institutional context

Nationally, political and socioeconomic power usually lies in the hands of the urban dwellers and commercial farmers in the lowlands. This relates to the historical reality that political change, revolutionary or otherwise, tends to originate in urban and intensively-farmed areas that provide the demographic critical mass required for political action. As a consequence, upland communities typically suffer from political marginality and

institutional neglect, which invariably translates into systems of social services that are underdeveloped compared to the other parts of the countries concerned. Governments are therefore insufficiently motivated to consider the particular interests of the upland people. Indeed, upland policies and institutions are often geared to satisfying the needs of outside interests, represented not only by logging and mining operations but also by in-migration of land-hungry households belonging to the politically dominant majority peoples.

The ethnic minorities living in upland areas usually suffer from serious prejudices on the part of the dominant lowland ethnic group(s), who may regard the minorities as culturally backward and inferior to themselves—a sentiment that is usually based on different language and religious patterns. This makes these indigenous people particularly vulnerable to exploitation by outsiders in economic relationships such as trade or migrant employment.

Services tend to be less strong and effective than they are in more accessible and politically and economically more important areas. In agriculture, extension, research, and conservation services for upland farming are commonly short of funds and manpower because most resources are concentrated on commercial farming for the lowlands (i.e., on food and cash crops that may be of no relevance at all to upland peoples' livelihood systems). Forestry departments commonly have a specific mandate to promote forest protection and large-scale contract reforestation, but are rarely adequately trained or geared towards upland protection and development, which must use more people- and community-centred extension and outreach methods and structures than are commonly practised.

Most importantly of all, the local tax bases in upland areas are small because the usual tax-generating economic activities, wage labour and commerce, are proportionately underdeveloped. Decentralisation of economic and political decision-making, a common strategy for upland situations where ethnic groups are important, can only achieve full meaning if it is accompanied by an unwavering resolve of the central authorities to continue to provide funding to the devolved authorities that, on a per capita basis, is much higher than that applying to the better-off sections of the rural populations elsewhere in the country.

The problem setting of the uplands of east asia

Reports from the region point to severe degradation of substantial areas. Effects such as complete removal of topsoil, deep gullying, and increased salinity may be entirely irreversible. There is almost no part of the uplands

that is not suffering from moderate degradation, including declining soil fertility in croplands, loss of palatable species in the rangelands, and loss of timber species from over-logged forests. Although quantitative estimates of degradation of natural resources and its consequences on the well-being and future development of the populations that rely on these resources differ, the weight of evidence is clear that land degradation is widespread and that it has severe consequences for the populations.

The overall outcome of this degradation is declining soil productivity, leading to poorer plant growth. Farming systems will have to adjust to the lower soil fertility by adopting crops that are better adapted to low soil fertility, often in combination with diminished availability of water. The importance of agriculture to the household economy would therefore decline, and non-crop activities, of necessity, will become more prevalent.

Degradation of the natural resource base is one of the main causes of persistent poverty in the uplands. It is possible to identify the **immediate causes** for this process:

- improper management of agricultural resources, including inappropriate rotations, absence or disrepair of erosion control measures, annual cropping on excessive slopes, use of poor quality irrigation water;
- improper management of natural forest, tree plantations, and woodlots, such as destructive timber harvesting, erosion-enhancing construction of access roads, mono-cultural plantations replacing natural multi-species' forests;
- conversion of forest land into cropland on slopes and hence loss of permanent vegetative cover;
- overgrazing of grasslands and concomitant compaction of soil and vegetation; and
- industrial development, such as large-scale farming, mining, hydropower generation, and related urbanisation, often brings pollution in its wake as well as causing immediate physical degradation.

These immediate causes reflect effects of the **underlying causes** that are at the heart of the problems of the uplands and that need to be tackled vigorously. They usually relate to the socioeconomic circumstances of the land users and the social, cultural, economic, and policy environment in which they must operate. The following are of particular relevance:

- population growth, through natural accretion of the local population and through inward migration ultimately leading to strong pressures on resources that are finite and often ecologically fragile;

- land tenure in the uplands has often become sub-optimal in the sense that the users feel insecure regarding their long-term rights to use a particular resource and are therefore keen to 'mine' their land but reluctant to invest time and effort in sustaining its long-term productivity;
- lack of alternative income opportunities make upland rural populations inordinately dependent on their natural resources, and poor households rarely have the opportunity to forego a short-term gain, even when clearly unsustainable, for the sake of long-term conservation benefits;
- geographic isolation restricts development and access to markets and hence limits the opportunities for cash income which are restricted to a relative handful of commodities that have high value and transport well;
- lack of appropriate conservation technologies that take into account the specific needs and capabilities of the upland populations (many proposed conservation techniques appear to be based on the supposition that the time and labour to be given by upland populations are both inexhaustible and cheap);
- limited institutional development leads to weakness in economic but also in social support services—the services that are provided may not be totally appropriate for technical or cultural reasons;and
- overlapping, at times conflicting, institutional mandates appear to be widespread when it comes to implementing integrated management systems—a situation aggravated by inconsistent statutory and policy frameworks for upland development.

A number of false assumptions about the problems, causes, and solutions for upland degradation persists, but the problems and solutions are often much more complex than the commonly-touted simplistic assumptions would suggest. First and foremost we must understand that the central problems are not so much conditioned by what is being done but by how it is done (i.e., the natural resource management practices actually followed). Uplands must contribute to the economic development of the resident populations through productive usage, but this must occur with a clear view to sustainability. Equally important is to ensure the fullest measure of participation, understanding, and collaboration by the resident populations in introducing modifications to their management systems.

A STRATEGY OUTLINE FOR POVERTY REDUCTION IN UPLAND AREAS OF EAST ASIA

The following key elements of a strategy for poverty reduction in upland areas represent a synthesis of the lessons learned from a range of projects and programmes, within Asia and elsewhere. These projects have sought

to address the problems of growing crops, raising livestock, and managing forest resources in upland areas under conditions that enable the population to derive increased benefits while simultaneously maintaining and improving ecological balances and promoting sustainable natural resource management systems. It is actually possible to draw a paradigm shift in upland development strategies, policies, activities, and techniques. A provisional description of this paradigm shift is presented as Annex I.

Policies

Effective implementation for sustainable poverty reduction in upland areas will call for a number of policy and statutory changes at the national level, such as:

- formulating a national policy framework for sustainable upland development;
- increasing public sector investment in upland areas (the external funding base for uplands may be enhanced through the implementation of 'transfer payment'* systems that tax use of upland resources by or for non-residents for the specific benefits of the upland communities that own the affected resources);
- retaining strong but refocused government extension, research, and training institutions for essential production systems;
- encouraging the development of local byelaws (rather than relying on national legislation that is less well suited to capture) that reflect the specific needs of individual communities within the uplands;
- granting legal land user rights and responsibilities to direct stakeholders in specific upland areas;and
- reconsidering the use of direct support, including cash and food for work, so as to diminish the perception of upland beneficiaries that conserving soil and natural resources is an interest of others that uplanders execute but in which they do not hold an important stake.

* Transfer payments can be operated at various levels. For instance, local authorities could be empowered to levy taxes, to collect royalties, or to operate systems of advance licenses on some extractive activities in their area of authority. For instance, in China, county governments are allowed to levy a small charge on power generated and on mining activities. To date, these resources are used for general budget purposes, but an effort could be made to specifically focus on maintaining resource balances in remote areas to the benefit of the people who actually live there. Internationally, mechanisms such as carbon sequestration could also be called upon to provide incremental resources for upland areas.

Institutions

Implementing a strategy for sustainable poverty reduction in upland areas will require a number of changes and interventions to strengthen the institutional support for resource management within the uplands at both the national and local levels. Key elements of such a strategy are:

- to broaden the institutional base by adopting multi-sectoral and inter-agency approaches and by developing partnerships between (local) government and strong private groups to encourage direct participation of groups of resource users;
- to create integrated upland agriculture-livestock-forestry support services and to renew focus on research that is relevant to upland conditions and that fully appreciates the prevalent, traditional, natural resource management mechanisms;
- to decentralise government institutions to bring decision-making and technical and managerial capabilities closer to beneficiary communities (this decentralisation should not be driven by a desire to reduce budget constraints at the higher levels of government);
- to give decentralised government institutions sufficient financial autonomy, in particular the opportunity to tax (possibly within the framework of 'transfer payments', discussed previously);and
- to emphasise human resource development, principally through the provision of training in as large a range of skills as possible, recognising that a more skilled population is likely to be more receptive to the principles and requirements of any sustainable natural resource management and to be better capable of implementing the corresponding strategies.

Technologies

Successful management of upland production systems in a sustainable way will unavoidably require the application of technologies and the management of technological change. Some of the appropriate technologies may be old, some may be radically new, most technologies will be adaptations of time-honoured methods to the changed situations. A technology strategy would need to include the following elements:

- adoption of suitable land-use and management practices to ensure that the requirements of individual agricultural enterprises match the land potential (a key component, where possible, would be the rational integration of crop, livestock, and tree-based production activities);
- verification that proposed natural resource management technologies are acceptable to local communities (R&D should therefore concentrate initially on identifying simple, low-cost, productive, and sustainable

techniques and on ensuring that the target communities are involved at all stages to avoid clashes with traditional practices and cultures to the greatest possible extent. If such conflicts are unavoidable, research should show the way towards limiting their impact.);

- maintaining agro- and biodiversity within the upland systems (proposals that would focus on high degrees of specialisation in activities based on natural resources should be verified carefully before their widespread adoption in recognition of the resilience to climatic hazards that is often built into traditional production systems); and
- systematically monitoring the process of adoption (or, indeed, rejection) of technology in upland communities to be able to draw reliable lessons from experience, analysing the reasons or specific conditions that have played key roles in successes or failures. These lessons should then be clearly documented and disseminated. Monitoring of strategy, policy, and action for results appears to be an important weakness in current practice.

Processes and methods

Implementation of a strategy for sustainable poverty reduction in upland areas also has a number of implications for processes and methods.

- The process of innovation itself needs to be sustainable—i.e., capable of generating new ideas and technologies on a continuous basis.
- Sustainable poverty reduction requires a 'bottom-up' approach, in which beneficiary communities actively participate in all stages of the process of innovation. The attitude of passive recipient, which has inadvertently been fostered in the past, needs to change into an attitude of active stakeholder. Improvements in upland management systems need to be demand-driven—i.e., responsive to the commitment to better management of upland areas by the local communities.
- Land husbandry support mechanisms need to focus on an integrated, 'holistic' approach to the production systems based on natural resources from the perspective of their social and cultural context. This will require not only a better understanding of the role and potential of each component of the production systems, but also a bundling of efforts by all support institutions.
- Alongside public support systems, private investment should also be encouraged, in particular at the farming household level. This will require strengthening of rural financial service mechanisms to increase savings' mobilisation and to improve access to external funding through production-oriented credit.

- Service charges and user fees need to be introduced to finance the necessary common maintenance and operations' costs of various development initiatives. For instance, rational use of irrigation systems and domestic water networks has been much improved by the introduction of water prices. Royalties could be imposed on local extractive activities, such as mining and timber operations, and on hydropower generation, for the benefit of local communities. This could form the financial basis for a system of transfer payments. It is essential, however, that the local communities participate in determining the levels of this taxation and the final uses of the taxes gathered.

Projects and programmes

Specific strategy elements related to the formulation and implementation of poverty reduction programmes and projects include the following:

- project support should be of sufficient duration to ensure continuity of funding of processes that are necessarily of a medium- to long-term nature;
- project design should allow for flexibility in implementation to learn from experience and to take account of changed circumstances, and also to give a better response to the expressed needs of the communities involved;
- projects should avoid setting up their own special management units but to the greatest possible extent should use the capabilities that reside within existing institutions within and outside of government—project management should then focus on co-ordination and monitoring activities;
- project design and implementation should consider from the outset the issue of replicability (this requires careful documentation of the logic and specific conditions that have contributed to project successes and failures; and also making this documentation easily available to outsiders.); and
- project design and implementation should also consider the issue of sustainability, especially if, in the absence of continued external funding, the post-project situation needs to be supported from the community's resources.

Support for environmental services

Starting from the premise that environmental transfer payments to upland communities could provide a major new source of development funds to improve their welfare, while promoting better management of natural resources, IFAD has proposed the establishment of an Environmental Services Facility (ESF). Its mission would be to improve understanding of

how to conserve environmental functions and services in Asia, while enhancing the local livelihood systems of poor and marginalised rural populations, including women. The ESF would co-ordinate research, knowledge-sharing, and capacity-building activities that will evoke practical methods by which upland communities can be included in environmental transfer payment mechanisms. New methodologies will be developed that induce innovative ways of transferring payments to upland communities to be implemented.

The ESF would build working models of successful environmental transfer payment mechanisms adapted to the Asian context. It would conduct focused field experimentation to define methodologies for best practice in transfer mechanisms. It would provide simple, practical solutions of how innovative institutional arrangements and financial mechanisms may be applied to foster local development for the poor and women, while simultaneously preserving and restoring environmental functions. The emphasis would be on conceptually coherent, analytically sound, and financially and institutionally sustainable approaches, with particular emphasis on developing and strengthening institutions associated with transfer payments. Networking at global, regional, national, and local levels would be a key function.

IFAD is increasing its assistance to poor rural communities to use their natural resources for their own betterment, while enhancing their ecosystems. Its past experience forcefully indicates that this is achieved most effectively if funds are channelled directly to the poor through their own strengthened institutions. The proposed facility would provide implementation support to IFAD-funded projects and programmes in the region.

The uplands of China

With the exception of the very sparsely populated dry plains in the north-west, the geography of China is characterised by a succession of highlands separated from each other by the large and fertile plains of the main rivers which provide a livelihood to the majority of China's people. The highlands themselves are diverse in topographical aspects, ranging from the high peaks and high altitude semi-plains in the Tibetan highlands to the less high, but not necessarily less steep, mountain ranges of central, south, and south-west China. Overall, about 150 million inhabitants still predominantly rely on these uplands for their livelihoods, among them a high proportion of China's 80 to 100 million officially recognised minorities.

The uplands of China show general characteristics that are compatible with the descriptions and definitions given above. Apart from the prevalence of ethnic minorities, climatic conditions set off the Chinese upland situations from those in other east Asian countries. The climate in the Chinese highlands is generally of a more pronounced continental type with relatively short but hot summers and equally short and cold winters. Rainfall occurs almost exclusively during the summer months and, in many areas, cropping is limited by humidity early in spring and late in autumn. Rainfall tends to be concentrated in heavy storms, which can not only cause serious damage to the fragile soils but can also accumulate into very serious floods in the lowlands. The Chinese highlands are a distinctly ungenerous environment for human development.

As a result of overall economic growth and the commitment to improving standards of social services, such as education, health, and nutrition, for the entire population, China's record in reducing absolute poverty has been impressive over the last four decades. The number of absolute rural poor has declined by about 210 million since the late 1970s. In 1998 the Government estimated that 50 million people were still living in absolute poverty, but using the poverty line of USD 1 per day advocated by the World Bank, slightly more than 100 million people would still be living in very dire circumstances. Poverty is increasingly concentrated in the resource-poor, densely populated mountain and loess plateau areas of the centre, north-west, and south-southwest, where potential for agricultural production is lowest. In recent years the central government has listed poverty counties for the purpose of implementing its poverty alleviation and food allocation programmes. The Vulnerability Analysis and Mapping (VAM) methodology developed jointly by the World Food Programme (WFP) and IFAD for China also results in a classification of counties according to poverty and vulnerability to recurrent and severe food shortages. While the two resulting lists of poor counties are not at all equal in detail, they share one important characteristic: poverty counties are situated mainly in upland mountainous areas. Both the central and regional governments accord high priority to poverty relief. The public strategy for these marginal areas emphasises development that is economically sound and ecologically sustainable, promoting fruit and tree production, livestock, and off-farm income opportunities to raise household cash income, since these activities are familiar to farmers.

The Leading Group for Poverty Reduction presented the 'Poverty Reduction Strategies in the Early 21st Century' programme with the assistance of the donor community during an international conference in May 2000. The updated strategy emphasises several action orientations that have been

promoted in joint IFAD/WFP projects since 1996. The new strategy rests on two major thrusts: (a) improved efficiency of interventions directed towards the poor through better targeting mechanisms at township level combined with a village and household-based approach; a set of multi-sectoral and complementary interventions, including support to human capital (education, health, and nutrition), rural infrastructure at farm and community level, appropriate technologies, and access to micro-credit and off-farm employment; strengthening institutional and co-ordination arrangements; making maximum use of local technical agencies for implementation; increasing the involvement of the poor in planning and monitoring; and (b) a long-term strategy and related funding for remote mountainous regions with high concentrations of the absolute poor, including emphasis on development of karst areas; improved technology, extension, and training for farmers; market development; environmental protection; minimum standards for education and health services; and introduction of the use of Village Development Plans.

IFAD's operations in China

IFAD was the first international financial institution to assist China in 1981. Since China became a member of IFAD in 1980, the country has benefited from 15 project loans for an overall financial commitment in the order of USD 400 million. Over time the Government of China and IFAD have focused their joint operations more and more on upland areas and on resource-poor and poverty-stricken minorities. All of IFAD's ongoing projects in China today are, in fact, situated in remote mountainous areas. This is true in particular for the projects that have been developed on the basis of the Country Strategic Opportunities' Paper prepared by IFAD in February 1999. The Qinling Mountains Area Poverty Alleviation Project in the mountain range bordering Shaanxi and Hubei provinces and the West Guangxi Poverty Alleviation Project in Southern China are two major examples.

For a number of years WFP and IFAD have pooled their development resources in projects in China. This has several advantages. Experience has shown that project design has been more efficient when jointly undertaken, and the rural poor have benefited as a result. Strong synergies have appeared between food-driven actions supported by WFP and IFAD's resource allocation with its strong emphasis on sustainable credit delivery favouring the poorer strata of the population. Co-financing with WFP makes it possible for IFAD to reach the poorest, who would not normally have access to credit because they often suffer food shortages. WFP food aid helps the subsistence farmer to become almost self-sufficient in food. The farmer can then use credit to undertake cash-generating activities and build up his/her assets for further development, thus allowing him/

her to meet essential needs, including the purchase of food once WFP food rations are no longer available. The joint operation thus provides a more sustainable development approach to the poorest beneficiaries.

Lessons from IFAD's experience in China

The long experience of IFAD in China covers a wide range of agro-ecological and cultural situations. It is possible to draw a substantial number of lessons for future programme identification and implications for project design and implementation. The key lessons learned are highlighted below.

Management and coordination

The Project Management Office (PMO) has proved to be an effective and efficient structure for co-ordinating project implementation under the overall guidance of Project Leading Groups (PLG) which bring together senior policy-oriented officials. PMOs generally consist of senior staff members detached from their technical units for the duration of the project. There may be a need to reduce the direct technical influence of the PMOs on project implementation and to focus their activities more on overall implementation, co-ordination, and on monitoring.

Participation

The use of PLGs, PMOs, and Village Implementation Groups (VIGs) is an approach that evolved over time. It now ensures effective participation by and co-ordination between agencies and improves the timeliness of implementation. The approach has also permitted the introduction of beneficiary participation in planning and selecting project activities. The Village Development Plans (VDPs) are the main tool to achieve this, together with the provision of a variety of investment packages from which the beneficiaries can select. Effective target group participation is being achieved through awareness building with participatory rural appraisal (PRA) methods at county level, followed by intensive training workshops at township level. The level of participation of villagers in project planning and implementation was already well established through the use of village committees. The participatory qualities of the VIG/VDP system of management are further strengthened by the presence of villages' Women Federation representatives in the VIG.

Vulnerability analysis and mapping (VAM)

To provide a more analytical approach to food security as a basis for project area selection and for project planning, WFP and IFAD have jointly developed a Vulnerability Analysis and Mapping (VAM) methodology for China. Vulnerability is defined as a combination of exposure to risks plus the inability to cope with those risks.

Targeting

With the help of VAM, together with the government, the definition of the project area is based on the identification of project townships with the highest vulnerability to food insecurity and the lowest scores on other human development indicators. Selecting townships in this way is effective in reaching poorer households at the village level.

Monitoring

Current methods are too output oriented, with insufficient attention being given to qualitative aspects. PMOs have a continued tendency to consider monitoring activities as a donor-driven condition of project funding rather than as a key instrument in day-to-day programme implementation management. Annual workshops have tried to streamline the systems for greater practical results. WFP is introducing a result oriented monitoring method, and a joint M&E workshop was organised in October 2000. Participatory annual workshops are organised to include participatory monitoring by the beneficiaries. This is strengthened by the PRA exercises. The possibility of incorporating VAM system methodologies into M&E is being explored also.

Financial services

A thematic review of credit under IFAD funding was carried out during 2000. The main preliminary findings are: (a) the choice of RCCs (Rural Credit Co-operatives) for credit intermediation is appropriate in light of the great need to build strong and reliable rural financial institutions; (b) the old PMO credit channel has the merit of being rapid in terms of immediate credit delivery; (c) there is a need for non-revolving fund support to RCCs to reach the township level as a grant so as to provide appropriate incentives to the RCCs to restructure in line with the activities that must be expected from them; (d) there must be enhanced flexibility on the part of RCCs in terms of adapting their products to the actual needs of their clients. A special sector programme loan has been prepared for approval next year and will provide technical support and policy guidance for the restructuring of RCCs.

Rural infrastructure works

Designs of irrigation schemes have to meet national standards, and they are often translated into provincial handbooks. The technical capacity of the Water Conservancy Bureau (WCB) has been assessed as very satisfactory by several international consultants who assisted during previous cycles of project formulation, appraisal, and implementation. Contributions by international consultants during project design have been of limited added value because they only confirmed the validity of the civil works designs. Work norms have been continuously reviewed and revised

according to the different situations. The actual experience is that supervision of construction itself may require more attention by the relevant higher echelon institutions.

Operations and maintenance of infrastructure

Beneficiaries are organised in user groups and, with guidance and support from the Village Committees and/or Village Implementation Groups (VIGs), are responsible for the routine upkeep of irrigation and drinking water supply systems. The Water Conservancy Stations at the township levels are specifically charged with providing support to these committees and with carrying out technical maintenance operations which are beyond the capabilities of the users. User committees receive relevant training as part of the system implementation. This has generally worked well and most systems are fully operational, except some dating from the 1960s where the initial design was faulty or work had been executed to standards that would not be acceptable today, causing considerable water losses and difficult maintenance. Terraces and other dry land structures are entirely maintained by the beneficiaries, and this aspect presents no concern. The upkeep of general infrastructure, such as roads, is the responsibility of the relevant public administration. Upkeep and functioning of village schools are the responsibility of the Village Committees who are authorised to charge levies to users to achieve this. Village clinics are usually maintained as a matter of course by the relevant health staff (i.e., the village doctor and midwife, who also charge patients for services rendered).

Water and soil management

Most of the remote and mountainous project areas are prone to erosion, drought, and flooding. Experience with agricultural infrastructure to improve water and soil management has been very successful and instrumental in better water harvesting, flood control, irrigation support, and land development with terracing and fertilisation. All these activities have been very effective in reducing erosion and natural hazards. Water balance studies are now introduced as a regular feature and a conditioner required before important irrigation works can be implemented. These studies reduce unwanted impacts on the environment and downstream users. While emphasis on tree crop development as an alternative to annual crops on marginal and steep land has always been present, it is necessary to strengthen the integrated approach for annual crops, tree crops, and natural forestry.

Marketing

Marketing reforms that were introduced alongside the household responsibility system in agriculture include the freeing of pricing and haulage systems. As a result, there are no longer fixed prices for

commodities, except for a few staple cereals that are variously called 'basic' or 'strategic'. Farmers are therefore confronted with uncertainty, as are traders; occasional shortages and gluts appear in the systems, in particular of perishable crops such as fruit. There may be a need to organise farmers into commodity-based farmers' associations, to counterbalance undue influence exerted by traders, to stimulate specific focused research, and to open parallel lines of communication for specialised technical support and advice.

Women

Projects specifically identify women as main beneficiaries, and since 1996 attention has been paid to earmarking credit specifically for women, with substantial proportions (up to 50%) of all credit reserved for women. On the basis of not increasing women's workloads, women are given priority to participate in suitable food-for-work activities, and the majority of the food-for-training workdays are also targeted at women. As women undertake a major part of agricultural activities, in addition to the household and childcare work, their needs are taken into account explicitly. Special attention will need to be paid to the health status of women and their education level, which are both necessary conditions for full involvement in cash generation activities and the better nutrition of their households. It is now mandatory for PMOs at all levels to include at least one senior staff of the local Women's Federation (WF).

National capacities

A major element of the IFAD and WFP strategies is to rely for project design and supervision on national expertise and consultants. Formulation of project components has been undertaken entirely by national technical consultants. IFAD and WFP provide limited external consultant support, both to ensure IFAD and WFP policies and criteria are taken into account, and to provide training to national consultants. A competent team of consultants has been established in this manner, and it grows with each project. This approach has been made possible largely through a UNDP umbrella project, providing the funds for mobilisation and building of national expertise. The technical papers prepared by the national consultants have always been of high quality and provide an excellent basis for consolidating the final proposals. The use of national consultants, in combination with VAM and PRA methodology for project formulation, has resulted in a reliable description of the socioeconomic and production systems prevailing in the project area. Many of these consultants work for different agencies, resulting in cross-fertilisation of experiences and knowledge. These experts find that in their day-to-day activities they adopt approaches and ideas generated during project development and that

they perform very useful advocacy work with their departments on behalf of project activities and issues.

IFAD's strategy for upland development in China

The basic strategies underpinning IFAD/WFP supported projects in China truly reflect the overall strategy that full respect for and enhancement of their natural resource bases are needed to achieve sustainable development of upland communities. The projects combine geographic targeting of poverty-stricken areas with a multi-sectoral programme of interrelated and complementary activities. They include: (a) strengthening infrastructure and service systems for agricultural production in order to expand productivity and therefore potentially increase food security, create cash-generating activities in livestock and other cash crops, and promote off-farm income-generating activities; (b) providing technical support and training to build productive capacity and to improve the credit-worthiness of beneficiaries; (c) enabling better access to credit for viable productive activities; and (d) improving access to health and education facilities in order to increase labour productivity and heighten the learning capacity of the population. Four major thrusts guide implementation: combination of WFP Food-Aid, IFAD loans, and government counterpart funds to enable integrated rural development in remote and marginal mountainous areas; targeting the poorest townships using VAM; beneficiary participation in planning and implementation at all levels using VDPs; and development of sustainable as well as poverty and gender-sensitive micro-finance institutions using Rural Credit Co-operatives (RCCs).

The West Guangxi Poverty Alleviation Project

The West Guangxi Poverty Alleviation Project is the most recent IFAD/WFP project in China, and represents the implementation of the relevant strategies, policies, and actions to their fullest.

Project area and targeting

The project area consists of 74 townships in 10 upland counties in the western part of the Guangxi Zhuang Autonomous Region. The area is situated in the eastern parts of China's Karst zone, which is characterised by the famous topography of discontinuous ridges of dense but uneven patterns of sharp peaks. The skirt-like mountain feet are rocky and have little soil. Annual rainfall is 1,300 to 1,500 mm, which would be adequate but for the fact that it is concentrated in the months of May through August. Surface flows are limited because most water disappears down numerous sink holes to form vast sub-surface river systems. These sink holes generally represent the bulk of available agricultural land, and many of the slopes that surround the actual sink holes have been terraced in a traditional

way. Flat land also occurs in the handful of river valleys. Other land is mostly on slopes and is officially considered as forest land, but various forms of cultivation, including shifting cultivation, take place and are tolerated because they reflect sheer necessity.

The population of the 74 counties is about 1.3 million in 260,000 households, residing in 700 administrative and 11,000 natural villages. The vast majority of villages belong to the Zhuang ethnic group, with substantial elements of other minorities such as Yao, Maonan, Miao, Yi, and Dong. Han Chinese groups are also present in the area but tend to live concentrated in the townships and larger villages.

Natural resource management systems evolved around the overriding need to provide food for household consumption, with generation of cash revenues based on local resources a secondary concern. The average remittance income in the area is not low by the standards of other mountain areas in China. Food production is mainly a function of water availability, with paddy rice and maize the dominant cereal crops. Sugarcane is an important cash crop outside the actual karst area and occurs mainly on the slopes of hilly parts. Soybean, peanuts, and sweet potatoes are mostly grown as intercrops, and vegetables are common in the winter season if sufficient water can be applied. Large parts of paddy fields are fallow in the winter because of no irrigation and low temperature. Overall, the cropping intensity index is below 2. Two maize crops are usually taken everywhere from dry land on slopes. In the high altitude region mainly middle-year paddy plus vegetables or rapeseed and maize intercropped with soybeans or sweet potatoes are grown. Low fertilisation rates, intrinsically poor soil, and lack of water result in low overall yields. Most households have livestock. Cattle and buffaloes are principally kept for cultivation and meat production. Pigs are fattened for sale, and some fowl may be kept for special occasions or for sale. There are strong interrelationships between crops and livestock, with the latter recycling agricultural waste and by-products into manure. There is almost no natural grazing for livestock. Vegetative cover is very uneven in the project area. Natural forest, which occurred on the 'earth mountains', has all but disappeared subsequent to deforestation drives in the late 1950s and late 1970s. To the extent that they have not been invaded for cultivation, these areas have recovered somewhat and can now be classified as shrub land. The karst formations themselves are still surprisingly well provided with trees, possibly because those species were less valuable and logging proved much more difficult in that terrain. The last decade has seen a serious drive towards the promotion of tree planting, mainly using 'economic' species.

The target group had an average 1998 per capita income of USD 182, and annual grain availability from on-farm sources was about 309 kg—in sharp contrast to the national average of 400 kg. The relatively good cash income position of the households is seriously eroded by the lack of food production. The main farm cash income is from raising livestock with minor contributions from economic crops. Off-farm employment provides the primary source of cash income, making out-migration of mainly male household members a common and indispensable practice, but this has given rise to the increasing feminisation of agricultural production. Due to the remoteness of many villages in the project area, the provision of social services is deficient for most households. Farmers usually classify themselves into four categories: the better off, the poor, the very poor, and the poorest. The project activities primarily target the latter three groupings. About 240,000 households in the project area are eligible to participate in the project. Households in more remote villages which are poorer than those with better access to facilities would receive top priority. The poorest category, usually households with sick or handicapped family members, is likely to face difficulty in participating in productive activities, but more support and guidance would be given to them to ensure that they would be able to participate in social activities, especially the health and education programmes.

Beneficiary participation

A Village Implementation Group (VIG) will be established in each village, composed of the village leader, village accountant, a representative of the Women's Federation, village agriculture and livestock technicians, and three elected beneficiaries, two of whom will be women. The VIG will organise preparation of the VDP through a participatory process involving the entire village. The process will include: (a) bringing together the village members to discuss investment options for the village; (b) formulating the village development plans; (c) disseminating information about the project activities to all households; (d) organising labour to participate in the food-for-work activities; (e) advising about credit applications; (f) assisting in loan disbursements, supervision, and collection; and (g) ensuring that activities are properly targeted and progress monitored by the beneficiaries themselves. Participation will be enhanced through the election of the village leader and the introduction of PRA techniques.

Rural finance targeting

RCCs will be responsible for providing financial services, including the supply of credit financed from the proceeds of the IFAD loan. RCCs will be responsible for assessment and approval of credit applications for the disbursal of loans and for follow-up and recovery, risk management,

accounting and reporting, supervising and monitoring of the credit operations. Project beneficiaries will be supported with training and with technical and managerial advice that may be taken into account by the RCCs when assessing the relative merits and risks of proposals put to them by project beneficiaries. In parallel, the Women's Federation will be enabled to run a precursor micro-credit programme specifically targeted at women. It is hoped that many participants in this programme will graduate to become credit customers of the formal RCC-system.

Gender considerations

The feminisation of agriculture due to high levels of out-migration by men, the intensification of farming activities, and household chores require activities with a strong impact on women. A larger proportion of women than men are illiterate, while most government services are provided by men. Therefore each and every project activity will have a specific focus on: (a) time-saving technologies in agriculture; (b) more women-responsive extension and training services; (c) empowerment of women through literacy; (d) promotion of high-value crops that have low labour inputs, and income-generating activities near or within the homestead; (e) better access to credit; (f) easy access to drinking water; and (g) development of biogas as a source of energy for the household. Decreased prevalence of diseases will result from the availability of better health services and training, substantially improved domestic water supplies, and the promotion of sustainable and sanitary energy resources. Education support will be provided to adults, predominately for women to enrol in functional literacy training programmes and/or to acquire technical skills, and large numbers of children will be encouraged to continue their primary education and will be financially supported for doing so. The various training programmes, together with the institutional approach of participatory village-level activity planning, will lead to a much greater awareness and assertiveness in all matters relating to the social and economic situation of the individuals, the households, and the communities in which they live.

Project structure and activities

The project components seek to achieve increased agricultural outputs, notably of staple food items and highly marketable fruit, and much-improved access to social services. Credit and human capital are the principal instruments to stimulate on- and off-farm production and income. For credit to achieve its fullest potential, it is necessary to increase the intrinsic productivity of agricultural land through irrigation and dry land improvements, and to strengthen key support mechanisms—notably agricultural, livestock, and tree crop input supply and extension services. Also, specific enhancements to infrastructure, water, and road access, will facilitate full participation in economic and social development among

isolated communities. Human development requires better access to social services, especially for women. The facilities and operational capacity of health and education need to be improved. It is equally important to enhance the target group's receptivity to progress. Hence, the project will include a substantial training and awareness-building programme, addressing the requirements of adult women and children on a priority basis.

Agricultural development will increase the proportion of land with adequate irrigation. Dry cropping land, mainly on gentle slopes, would be improved through soil deepening, levelling, and terracing. Soil fertility and productivity will be enhanced through increased use of organic manures resulting from higher production of crop residues and expanded livestock production. Increased crop productivity will allow planting of economic trees on steeper land or low-fertility sites previously cultivated annually. These regenerative farming techniques, together with economic environmental forestry actions in degraded forests will increase the opportunities for non-timber forest products and further the establishment of a sustainable natural resource management system. The VIGs will organise the beneficiaries in water-user groups to ensure operation and maintenance. Technical training and on-farm demonstrations will mainly include poor farmers and especially women. Agriculture and animal husbandry extension stations will be upgraded and staff will undergo training, in particular to sharpen gender and poverty awareness.

Financial services, with a poverty and gender focus, are a major instrument and project component to help the target group build assets for sustainable development. Emphasis will be on credit and savings' mobilisation to ensure sustainability. The driving force behind the production activities would be credit, implemented by the township RCCs under the overall supervision of the county Rural Credit Co-operative Unions (RCCUs). Improved access to credit will directly benefit farmers, especially women, and target profitable activities such as cereal grain production, annual and perennial cash crops, livestock, economic trees, food processing, and a wide range of income-generating off-farm activities. The aim will be to develop the RCCs into an effective, efficient, and viable rural co-operative banking system with farmers as members holding shares and with savings collected for additional sustainability. Before starting the credit programme, a savings and credit awareness campaign will be executed at village level with close co-ordination between RCCs, PMO, WF, Village Committees, and other relevant bodies. Savings' mobilisation and shareholding of RCCs will be high on the agenda. Staff training will also be offered in management, loan assessment, processing, and inspection. Village leaders and agents will also receive training to ensure sufficient

practical knowledge and credit awareness at the level of the beneficiary communities.

Social development

Poor educational levels and ill health reinforce poverty. Therefore improved access of the poor to social services is the start for creating the human capital necessary to produce physical assets. Activities will include literacy training, particularly for women, and building awareness about health and nutrition. Reducing primary school dropout rates, particularly among girls, will be another major activity. Support to village health workers and the rehabilitation of primary schools at village level to improve access to literacy and skills' training will shore up the previous activities. There will also be a large element of skills' training in preparation for obtaining loans for income-generation activities. The Women's Federation (WF) will organise this training in recognition of this component's strong focus on women and will have a permanent staff position under each PMO. A special micro-initiatives' fund that the WF has initiated in some counties will be expanded. A large programme to build family biogas units would complement the efforts in the area of household fuel improvement. Technical training for productive activities and awareness building on food security will be major activities throughout the implementation period in all components. Training will be provided for trainers, women, and men in the villages, and for administrators in PMOs and RCCs.

Rural infrastructure

Improvements in the availability and quality of drinking water, better access roads, and electrification will ease the burden on women and facilitate the development of off-farm income-generating activities.

Project management will use PLGs and PMOs, the well-tried and proven methodology of previous IFAD/WFP projects. However, the role and structure of PMOs have been revised to become more supportive of the technical implementing agencies. Staffing has been reduced to the minimum required for effective facilitation of project implementation. They will use and co-ordinate the existing technical and social agencies and bureaux at province, prefecture, county, and township levels for undertaking project activities. Support will consist of provincial start-up workshops, training on monitoring and PRA methodologies, computer and accounting training, transport facilities, office equipment, and associated running costs. Study tours and inter-project PMO workshops will be organised to share experiences. Technical training for productive activities and building awareness on food security will be a major activity in all components. As the WF is the primary organisation with a mandate to assist women, each PMO will have a representative from the Federation as a full staff member.

Annex I: The Paradigm Shift in Upland Development

Top-down physical planning paradigm	Bottom-up participatory planning paradigm
Looking at land degradation within uplands in terms of what is happening (reacting to symptoms)	Looking at land degradation within uplands in terms of why it is happening (tackling underlying causes)
Focus on off-site and downstream costs and benefits of improved resource management	Priority focus on on-site benefits of improved upland resource management
Management for single purposes (e.g., protection of water, biodiversity preservation)	Management for multiple uses, combining individual purposes into compatible resource-use systems and activities
Catchment protection through increased regulation and restrictions on land use	Emphasis on lifting local constraints to enable upland communities to manage their resources
Insecure rights of access	Recognise rights and concomitant responsibilities and duties
Water and soil conservation by physical structures	Increased productivity by improved practices
Single-sector actions, applying a piecemeal approach with 'critical' individual management plans identified and implemented	Multi-sectoral and interdisciplinary effort in a demand-driven programme approach
Starting from technical knowledge and 'proven' technologies	Starting with knowledge of indigenous technologies and culture
Priority needs identified by professionals	Priorities and needs identified by the upland communities with assistance from outside expertise
Limited access to extension advice of improved resource management	Development of locally-based extension support services applying an integrated approach to advising
A top-down transfer of technology to passive recipients	A stakeholder-centred participatory learning and technology development process

Annex 1

Conference Programme

Sunday, November 10, 2002

19:00	Informal Get Together and Dinner

Monday, November 11, 2002

09:00 - 09:20	Meeting of the Vice-Governor with representatives of conference organisers
	Opening Ceremony
09:20 - 10:00	Welcome Address by Dr. Cui Peng, Director IMHE Welcome Address by Dr. Robert Haas, German Embassy Welcome Address by Dr. Hans Pfeifer, Director, InWEnt (formerly DSE/ZEL) Welcome Address by Dr. Klemens van de Sand, Assistant President IFAD Welcome Address by Dr. Gabriel Campbell, Director General ICIMOD
10:00 - 10:15	Inauguration Address by Dr. Chen Wenguang, Vice-Governor of Sichuan Province
10:15 - 10:40	Objectives and Structure of the Conference Prof. Sun Honglie, Conference Co-Chairman
10:40 -11:10	*Group Picture and Tea/Coffee Break*
	Plenary Session I: Poverty in Mountain Areas
11:10 - 11:40	Assessment of Rural Poverty in the Asia and Pacific Region Dr. Ganesh Thapa, IFAD
11:40 - 12:05	Poverty Situation of Mountain Areas in the Hindu Kush-Himalaya Dr. Binayak Bhadra, ICIMOD and Prof. Narendra Raj Khanal, Tribhuvan University, Nepal
12:05 - 12:30	Poverty Reduction and Mountainous Areas Development in China Mr. Cao Hongmin, China Spark Programme for Poverty Alleviation, MOST, Beijing
12:30 - 13:30	*Lunch*

13:30 - 13:50	Causes and Roots of Poverty Dr. Trilok S. Papola, India
13:50 - 14:10	The Importance of Development Indicators for the Assessment of Mountain Development Prof. Hermann Kreutzmann, University of Erlangen, Germany
14:10 - 14:30	Terms of Reference for Working Groups and Formation of Working Groups
14:30 - 15:30	Working Group Discussion A/B/C/D Poverty in Mountain Areas: Causes and Indicators
15:30 - 16:00	*Tea/Coffee Break*
16:00 - 17:30	Working Groups cont'd
19:00	*Dinner Reception*

Tuesday, November 12, 2002

08:30 - 08:40	Introduction to the Day Dr. Mohan Man Sainju, Conference Co-Chairman
08:40 - 10:15	Plenary Presentation and Discussion of Working Group Results
10:15 - 10:45	*Tea/Coffee Break*
	Plenary Session II: Approaches and Experiences
10:45 - 11:05	Utilisation and Management of Natural Resources in Mountainous Areas of Western China Prof. Liu Jiyuan, Director, Liu Yansui, Deng Xiangzheng Geographical Science and Natural Resources, Beijing
11:05 - 11:30	Natural Resource Management in Bhutan Dr. Walter Roder, Swiss Development Cooperation, Bhutan
11:30 - 11:50	Highland – Lowland Linkages in the Globalised World Dr. Narpat Singh Jodha, ICIMOD
11:50 - 12:10	Sustaining Mountain Economies: Sustainable Livelihoods and Poverty Alleviation Stephen F. Rasmussen, Aga Khan Rural Support Programme, Pakistan
12:10 - 12:30	Terms of Reference for Working Groups and Formation of Working Groups
12:30 - 13:30	*Lunch*
13:30 - 15:30	Working Group Discussion A/B Natural Resource Management in Mountain Areas C/D Highland – Lowland Linkages

15:30 - 16:00	*Tea/Coffee Break*
16:00 - 16:30	Working Groups cont'd
16:30 - 18:00	Plenary Presentation and Discussion of Working Group Results
19:00	*Dinner*

Wednesday, November 13, 2002

08:30 - 08:50	Introduction to the Day Dr. Mohan Man Sainju, Conference Co-Chairman
	Plenary – Resource Development and Tourism
08:50 - 09:05	The Development and Governance of Human Resources in China Prof. Ai Nanshan and Qin Yuanqing Sichuan University, Chengdu
09:05 - 09:20	Off-farm Industries and their Development Strategies in Chinese Mountains Prof. Chen Guojie and Wang Qing, Institute of Mountain Hazards and Environment, Chengdu
09:20 - 09:35	Rural Tourism as a Tactic Measure to Sustainable Tourism in Tibet Autonomous Region, P.R. China and its Implications of Poverty Alleviations Dr. Li Lihua, Vice Director General and He Jingming, Tibetan Tourist Bureau
09:35 - 09:50	Tourism as an Instrument for Area Development and Poverty Alleviation with Focus on Nepal Prof. Pitamber Sharma, Nepal
09:50 - 10:20	Plenary Discussion
10:20 - 10:40	*Tea/Coffee Break*
	Plenary – Farming, Food Security and Migration
10:40 - 10:55	Agricultural Transformation in Mountain Areas in China Prof. Wang Dasheng, Agricultural Office of Chinese Academy of Sciences
10:55 - 11:10	Agricultural Transformation in Himachal Pradesh Dr. Tej Partap and Dr. H.R. Sharma, Agricultural University of Himachal Pradesh, India
11:10 - 11:25	Livestock Husbandry in Chinese Mountain Area Economy Prof. Wu Dengjun and Prof. Wen Xintian, Sichuan University for Agriculture

11:25 - 11:40	A Policy Approach to the Rehabilitation and Socio-economic Development of Mountain Regions for Water Conservancy Engineering of the Three Gorges Reservoir on the Chang Jiang River, P.R. China Luo Yuanhua, Qiao Jianping and Zhou Pinggen, Immigration Planing Department of the Three Construction Committees of the State Council, Beijing
11:40 - 12:00	Plenary Discussion
12:00 - 12:15	Terms of Reference for Working Groups and Formation of Working Groups
12:15 - 13:15	*Lunch*
13:15 - 15:45	Working Group Discussions A Human Resources Development B Tourism and other Off-Farm Industries C Agricultural Transformation D Migration of Rural Population
15:45 - 16:15	*Tea/Coffee Break*
16:15 - 17:30	Plenary Presentation and Discussion of Working Group Results
18:00	Evening Bus Tour of Chengdu *Dinner at Restaurant*

Thursday, November 14, 2002

08:30 - 08:40	Introduction to the Day Dr. Mohan Man Sainju, Conference Co-Chairman
	Plenary Session III: Strategies and Policies
08:40 - 09:30	Research on the Problem of the Poverty Alleviation in Minority Regions of China Dr. Huang Jianying, Central Minority University, Beijing
	Plenary Discussion
09:30 - 10:30	Developmental Strategies and Policies of Mountain Areas of Western China Prof. Zhong Xianghao, Li Huixia and Cai Zongxin, Institute of Mountain Hazards and Environment, Chengdu
	Plenary Discussion
10:30 - 11:00	*Tea/Coffee Break*
11:00 - 11:30	Growth, Inequality and Poverty in Rural China – The Role of Public Investment Prof. Zhang Linxiu, Center for Chinese Agricultural Policy, Beijing

	Plenary Discussion
11:30 - 12:30	IFAD's Strategy Approach to Rural Poverty Reduction in China Erik Martens, IFAD
	Plenary Discussion
12:30 - 13:30	*Lunch*
13:30 -	Field Trip – Dujiangyan Irrigation System *Dinner at Dujiangyan*

Friday, November 15, 2002

08:00 - 08:15	Introduction to the Day Dr. Mohan Man Sainju, Conference Co-Chairman
	Plenary Session IV: Recommendations
08:15 - 08:30	Terms of Reference for Working Groups and Formation of Working Groups
08:30 - 10:15	Working Group Discussions A Natural Resource Management and Environmental Protection B Infrastructure and Communication C Participation of Local Population D Institutional Development and Human Resources Development
10:15 - 10:45	*Tea/Coffee Break*
10:45 - 12:30	Working Groups contd.
12:30 - 14:00	*Lunch*
14:00 - 15:30	Plenary Presentation and Discussion of Working Group Results
15:30 - 16:15	*Tea/Coffee Break*
	Closing Ceremony
16:15 - 16:40	Synthesis of the Conference and Presentation of Recommendations Dr. Narpat S. Jodha, ICIMOD
16:40 - 17:00	Closing Remarks InWEnt, IFAD, ICIMOD, IMHE
17:00 - 17:15	Official Closing Dr. Mohan Man Sainju, Conference Co-Chairman
18:00 - 21:30	*Dinner and Sichuan Opera Show, Downtown Chengdu*
21:30	Return to Hotel

Annex 2

List of Participants

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Annex 3

Information about the Organisations

InWEnt – Internationale Weiterbildung und Entwicklung gGmbH (Capacity Building International, Germany)

InWEnt – Internationale Weiterbildung und Entwicklung gGmbH (Capacity Building International, Germany) is an organization for international human resources development, advanced training and dialogue. Established in the year 2002 through a merger of Carl Duisberg Gesellschaft e.V. (CDG) and the German Foundation for International Development (DSE), it can draw on decades of experience that both organizations have gained in the field of international cooperation. Its international training and dialogue programs are directed at experts, managers and decision-makers from business and industry, politics, public administration and civil society from all over the world. With a budget of roughly 130 million Euros it reaches every year about 35,000 participants from developing countries, from Germany, from other industrialized countries and from Eastern Europe. The Federal Government is its main partner and the Federal Ministry for Economic Cooperation and Development the main commissioning body.

The Department for the Environment, Natural Resources and Food consists of three divisions that are located in Berlin, Leipzig-Zschortau (Saxony) and Feldafing (Bavaria). Each focuses on different areas of expertise, strengthening each other as centers of competence by focusing on the following areas:

- Environment, Energy and Water (Berlin)
- Natural Resources and Biodiversity (Leipzig-Zschortau)
- Rural Development, Food and Consumer Protection (Feldafing)

Institute of Mountain Hazards and Environment (IMHE)

The Institute of Mountain Hazards and Environment of the Chinese Academy of Sciences was formally founded in May 1966. Since that time, in accordance with the needs of resource exploitation and economic development and the problems of mountain hazards, ecological destruction and degradation of the environment in south-western China, the institute has continuously adjusted its research objectives to include more comprehensive research approaches for the protection of mountain areas as well as strengthening new techniques in mountain remote sensing and computer cartography with the objective of supporting sustainable agriculture.

Nowadays the institute carries out research and gives policy advice in the following fields.

- Mountain hazards and their prevention (debris flow, landslides, soil erosion etc.)
- Environment evaluation, planning and regional sustainable development
- Degradation of the mountain environment and ecological recovery
- Remote sensing of the mountain environment, cartography and GIS
- Soil ecology and fertilisers

The institute has 9 research divisions and 6 field stations with 180 staff members, including 21 professors, and 50 associate research professors and senior engineers.

International Fund for Agricultural Development (IFAD)

IFAD's main objective is to provide direct funding and mobilise additional resources for programmes that promote the economic advancement of the rural poor – mainly by improving the productivity of on and off-farm activities. IFAD mobilises resources and knowledge through a dynamic coalition of the rural poor, governments, financial and development institutions, non-governmental organisations (NGOs), and the private sector. By responding to the expectations of the rural poor, and with their active participation, the Fund strives to design and implement innovative, cost-effective, replicable programmes that have sustainable impact.

The bulk of IFAD's resources is made available to low-income countries on highly concessional terms, repayable over 40 years, including a grace period of ten years and a yearly service charge of 0.75%. Since its establishment, IFAD has financed 603 projects and programmes in 115 recipient countries and territories for a total commitment of approximately USD 7.7 billion in loans and grants. Beneficiary governments and other financing sources in recipient countries have contributed over USD 7.6 billion, while another USD 6.4 billion has been contributed by external co-financiers, of which bilateral donors have provided over USD 1.1 billion, multilateral donors some USD 5.1 billion, and various international NGOs USD 30.2 million.

Membership in the Fund is open to any state that is a member of the United Nations or its specialised agencies or the International Atomic Energy Agency. The Governing Council is IFAD's highest decision-making authority, with 162 Member States represented by a Governor and Alternate Governor. The Council meets annually. The Executive Board, responsible for overseeing the general operations of IFAD and approving loans and grants, is composed of 18 members and 18 alternate members. The President, who serves for a four-year term (renewable for a further term), functions as the Fund's chief executive officer and chairperson of the Executive Board. The current President of IFAD is Mr Lennart Bage, who is serving his first four-year term.

The International Centre for Integrated Mountain Development (ICIMOD)

Established in 1983 to serve the Hindu Kush-Himalayan mountain region through a mandate that gives it the responsibility to mobilise knowledge concerning mountain development and disseminate it along with skills commensurate to its use, the International Centre for Integrated Mountain Development (ICIMOD) focuses its work in research and development on the mountain people themselves and the terrain that provides them with the products that are essential for their survival: natural, common property resources, agricultural and land-use systems established through human ingenuity, entrepreneurship skills, and off-farm and non-farm activities

ICIMOD implements its work through partnerships in the Hindu Kush-Himalayan (HKH) region for the most part, as a concerted outreach strategy. Partners are seen as valuable intermediaries to the mountain people and, concomitantly, partners give valuable feedback, not only on best practices ,training, and replicable technologies, but also on the impact of policies; and in turn this information can be channelled to policy-making level, giving an impetus to ICIMOD's advocacy role.

Improved and more equitable and sustainable livelihoods for mountain peoples are critical for both the region and the world. The last decade has shown that, although seemingly isolated, events in mountain areas and the increasing deterioration of living standards there do, indeed, have an important global impact. The need to address this in a focused and concerted manner has led to ICIMOD's current strategy for 2003 - 2007 and the reorganisation of the Centre into six integrated and interlinked programmes.

The integrated programmes include the following three inter-related sectoral programmes.
1. Natural Resource Management (NRM)
2. Agricultural and Rural Income Diversification (ARID)
3. Water, Hazards, and Environmental Management (WHEM)

The plan also has three cross-cutting programmes.
4. Culture, Equity, Gender, and Governance (CEGG)
5. Policy and Partnership Development (PPD)
6. Information and Knowledge Management (IKM)

The Centre's particular mission is to develop and provide integrated and innovative solutions for sustainable development in cooperation with regional and international partners, and through them to foster action and change for overcoming mountain people's economic, social, and physical vulnerabilities. ICIMOD's mission, therefore, is well in congruence with the Millennium Development Goals to which the countries of the HKH are signatories.

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